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ABSTRACT

This report explains the Bridgeport Comprehensive Employment and Training Act (CETA) manpower information systems project. Three components of the project are considered: (1) The automated manpower management information system (MIS), which incorporates a cost-effectiveness analysis algorithm and permits a limited amount of impact and outcome analysis, and which replaces the manual system, which is incapable of effective and efficient operational control and monitoring due to the large number of CETA clients in the Bridgeport area; (2) the labor market information system (LMIS), which consists of an automated economic index generator and an automated shift and shares model, providing an excellent tool to analyze the economic health in the Bridgeport area and offering planners timely and relevant information for the decisionmaking process; and (3) a labor market supply/demand survey of the Bridgeport area, which serves as input for LMIS. The report concludes with a proposal to link the MIS and LMIS sub-systems into one comprehensive manpower information system. (Author/WL)

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TITLE

# BRIDGEPORT AREA MANPOWER INFORMATION SYSTEMS PROJECT

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16. Abstracts

This report, explains the Bridgeport CETA manpower information systems project. Three components of the project are considered. The first, the automated manpower management information system (MIS), was designed to replace the manual system, which is incapable of effective and efficient operational control and monitoring due to the large number of CETA clients in the Bridgeport area. Furthermore, the automated MIS goes one-step further and incorporates a cost-effectiveness analysis algorithm and permits a limited amount of impact and outcome analysis. The second component, the labor market information system (LMIS), consists of an automated economic index generator and an automated shift and shares model. The LMIS provides an excellent tool to analyze the economic health in the Bridgeport area and offers planners timely and relevant information for the decision making process. The third component serves as input for the LMIS and consists of a labor market supply/demand survey of the Bpt. area. The work closed with a proposal to link the MIS and LMIS sub-systems into one comprehensive manpower information system.

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# CHAPTER I

## INTRODUCTION TO THE MANPOWER INFORMATION SYSTEMS PROJECT

### Overview

The Office of Manpower Research and Development as previously known undertook a major system design project whose purpose was to develop a Labor Market Information System. The primary function of this system was to provide technical back-up to HRD's planning and evaluation processes. An adequate planning process required timely and comprehensive information on the universe of need from both the demand and the supply sides of the Bridgeport labor market. The human resource planner needs data on the number and characteristics of all potential manpower clients and the number and characteristics of likely labor market shortages. An adequate evaluation process required feedback on the extent to which manpower policies effect improvements in clients' employability as well as reductions in the "mismatch" in the Bridgeport labor market.

The rationale for this project flowed from two observations. On the one hand, manpower programs (as well as a variety of non-governmental training and placement activities) have been created in a largely, disintegrated fashion. The number and variety of these programs continues to increase as the Federal government identifies client populations requiring special labor market services. The capacity for governmental management of these programs is increasingly hindered by the lack of an overall conception of the labor market system and of the precise function of manpower programs within this system.

On the other hand, government agencies have a great deal to learn

from the business community regarding management techniques, particularly the management of information systems. Simple monitoring of all existing manpower programs -- their costs, services provided, and clients receiving assistance -- is a difficult and time-consuming task without a systematic data storage and retrieval capacity. The attempt to link-up these programs withthe larger manpower objectives and to develop manpower policy in the context of Bridgeport's particular labor market structure clearly requires an integrated information system.

Thus, the primary objective of this project was to specify the function of a manpower system within the Bridgeport labor market, and to design an integrated information system which could support and facilitate the management of this function.

The Labor Market System

Figure 1 (Overall System)

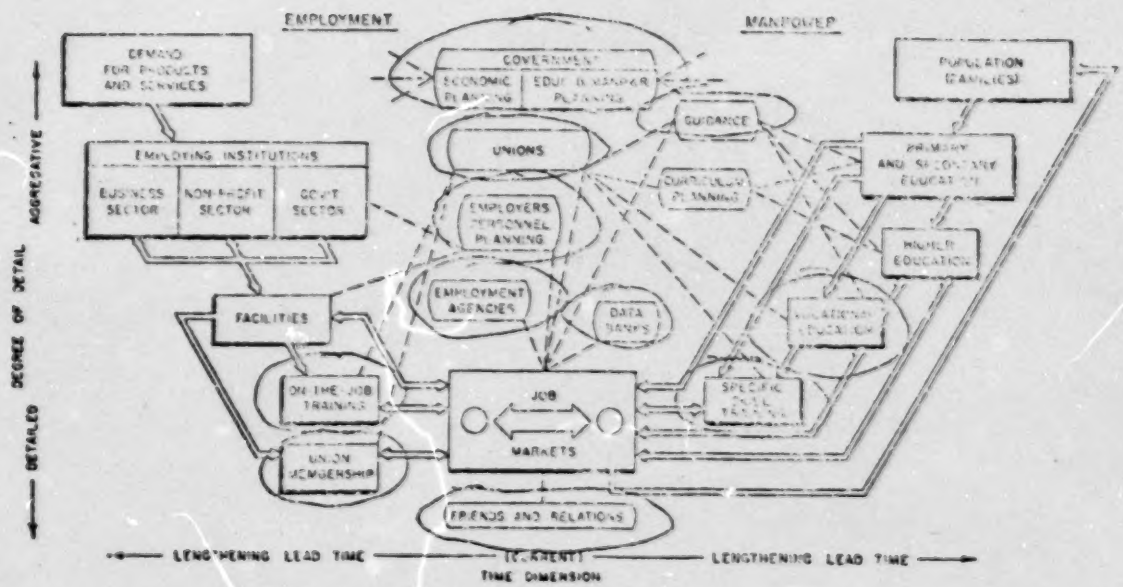


Figure 1 provides a picture of the overall labor market system. The Job Market in the center is the arena within which workers are matched with jobs. Notice, however, that between the business system on the left and the education system on the right is a large "grey area" occupied by a variety of public and private labor market intermediaries. Each of these intermediary activities is concerned in some way with facilitating this matching process. In other words, there is an entire "intermediary system" within which manpower policy is just one element.

Thus, one objective of this project was to integrate manpower policy with the activities of labor market intermediaries. And, at least in potential, a labor market information system was useful to each of these groups.

Figure 2 (Project Tasks)

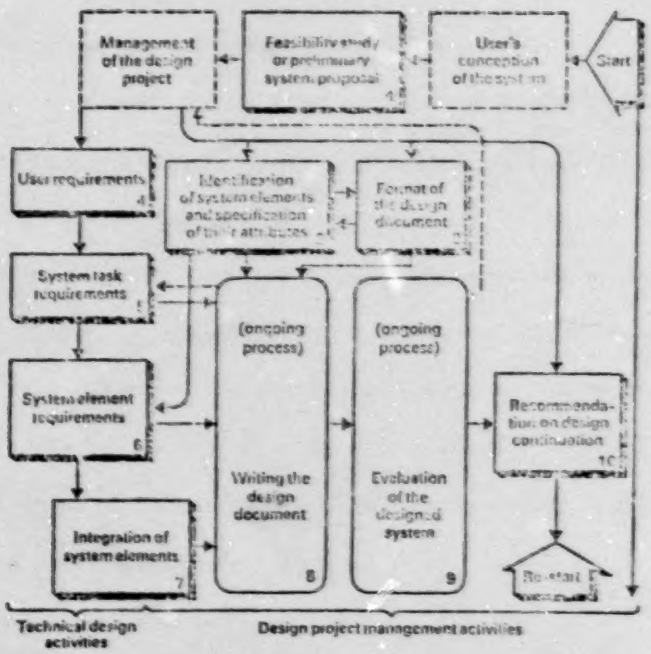


Figure 2 presents a general picture of the sequence of steps involved in the information system design project. A time dimension was not included; however, this project was supported by an 18-month grant from the Department of Labor. During the first 3 months of research, steps 1-3 were completed. This involved gathering information on available statistical survey techniques and possible automated systems designs for information management, familiarization with the Bridgeport labor market, and making contact with the local labor market intermediaries.

Results

After evaluating the completed research and investigative results obtained from steps 1-3, it was concluded that no more than three of the major components for the project could effectively be completed. The task was immensely disproportional relative to the available resources, including the general timeframe.

Components were chosen by the degree of difficulty inherent within each, beginning with the least difficult. The first was the entire survey design including the computerized system to statistically evaluate and summarize the results. The second component included the design and automation efforts for two LMIS sub-systems. In particular, the shift and shares model and an economic index generator specifically for the Bridgeport area. These two components constitute the LMIS.

The survey component gathers and condenses information from the Bridgeport Labor Market to be utilized as input into the shift and share model and the economic index generator. It should be pointed out that the survey aspect is only a substantial task the first time around; thereafter a small number of key-elements identified in steps 1-3 will serve as monthly input for the LMIS. The initial survey on the other hand, will

constitute a large representative portion of the Greater Bridgeport Labor Market and should, therefore, logically amount to a yearly effort. One immediate use for the shift and share model and the economic index generator was to produce large quantities of information for the Economic Newsletter, now utilized by planners in various phases of state and local government and by banking institutions in the Bridgeport area.

The third component, which is now being extensively tested utilizing actual client data and which will be operational Oct. 1, 1976 is the automated MIS for the CETA Prime Sponsor. This MIS is a highly sophisticated set of management routines integrated into one complete system. The MIS serves as an effective tool for efficiently managing the large number of clients served by CETA in Bridgeport. It also has the capabilities of providing planners with pertinent statistical information for the decision-making process. In summary, three completed components are operational at this time (MIS is operating parallel to the manual system for 6-months). Each serves its purpose well, but the whole consisting of the three components integrated into one comprehensive system will equal more than the sum of the individual parts. This integration, or linking process is covered in the last chapter.

A general direction of flow and what to expect in each chapter follows. Chapter II deals with the MIS. The MIS was alloted the most space since it is the more complicated component of the three mentioned. The third chapter explains the survey. Chapter IV addresses the shift and shares framework and briefly covers the economic index generator. Chapter V amounts to a conclusions and recommendations summary and focuses on the difficult task of integrating, or linking the above mentioned components into one comprehensive system in order to successfully complete the

Manpower Information Systems Project. In each of the chapters contained in this work, the complicated methodologies, formulas, theories and evaluation algorithms have been entirely suppressed, or minimized in order to allow easy and continuous reading.

## CHAPTER II

## THE AUTOMATED MANPOWER MANAGEMENT INFORMATION SYSTEM

### Introduction

This chapter, explains an automated manpower management information system developed to replace the first generation manual manpower management information system for the Bridgeport Comprehensive Employment and Training Act (CETA) prime sponsor.

The second generation system utilizes many features of the first generation system, and goes on to refine operational control and monitoring techniques, adds cost-effectiveness analysis and impact and outcome evaluation procedures.

The need for an efficient, effective and comprehensive manpower management information system was recognized because planners, program operators and management realized more precise and meaningful information was necessary for the control, planning and evaluative functions. A grant was received from the Federal government to design and implement an automated manpower management information system capable of providing the necessary information to satisfy the above mentioned requirements. This section constitutes a major effort in precisely that direction.

### Statement Of The Problem

At the present time, the Bridgeport Area Manpower Management Information System (BAMMIS), designed specifically for the Comprehensive Employment and Training Act (CETA), serves as a federal reporting system and generates a variety of summary reports for internal use by management, but lacks the capabilities for efficient and effective program management, control and

evaluation. "Effectiveness is the foundation of success-efficiency is a minimum condition for survival after success has been achieved. Efficiency is concerned with doing things right. Effectiveness is doing the right thing".

Manual BAMMIS does not have the capabilities for clear problem identification and quick corrective action. Meaningful current analyses is not possible. Time lags in service unit reporting have been the rule for BAMMIS. Time lags of less than two weeks are rare. Delays of from three to six weeks are common and in many instances these delays are due to erroneous or missing data being submitted to the Central Records Unit (CRU), from the various programs operating under CETA.

Overview of CETA

Effective October 1, 1974, all manpower program activities funded under the Comprehensive Employment and Training Act (CETA) were required to operate in accord with CETA requirements. Because of the decentralized and decategorized nature of CETA on a nationwide basis, the Department of Labor placed special emphasis on accurate and timely reporting of program activities by prime sponsors. CETA regulations do not prescribe a program management system for the prime sponsor. The rationale for evaluative activity beyond the minimal federal requirements, therefore, is the responsibility of local government. CETA is a major shift away from the categorical focus of the earlier manpower legislation. It places substantial authority for manpower planning and program operations in the hands of local government. The rationale is that local prime sponsors can develop manpower approaches tailored to the local labor market realities and gives prime sponsors considerable flexibility in

the choice of target groups, service delivers and service mix.

The situation being such, local manpower planners must have access to tools which facilitate evaluation activities designed to support the manag ment of operations, to implement choices among alternatives, and to help gauge the impact of manpower programs on the community, the individual and the government. What works for whom, when and how, what the long-run impact will be and which program worked best considering their costs. CETA, within the greater Bridgeport area, has one primary long-range goal. The increase in wage levels of minorities and disadvantaged groups is precisely that goal. Many sub-goals exist within different program components such as educational, attitudinal and skill level changes of participants, but essentially all of these sub-goals reinforce and translate directly into the ultimate goal. The success of the applicant in the labor market is the most appropriate framework for the measurement of the goal.

Efficiency and cost considerations warrant that the various programs in CETA be evaluated using some common set of factors, as opposed to evaluating each particular program using different standards and measurements tools. Ideally, questions such as who to fund next year, who should do what for which groups next year, what seems to work best under various conditions, which programs and operators to watch carefully next month and which data indicators are good predictors of overall success, need to be answered and are answered by the second generation system.

Data Records

The necessary records for BAMMIS are generated around two centers, the individual client and the services unit. Minimum records for BAMMIS in its present form include an entry record with socio-economic data for

each client, an employability plan, status change records to record movement with the system and follow-up records to record information on longer term participant outcomes. The second generation system supplements what is now available and in turn allows more potential. With the second generation system, attention is focused upon the service unit (sub-contractor level). Minimum records to be generated in this area include activity records, which tally the types and quantities of services rendered, cost records, which account for all direct costs incurred by the service unit and overhead costs.

The second generation computerized system eliminates the incompleted forms and missing data problem mentioned earlier. Simple, but effective data quality control routines and procedures identify and quickly correct incomplete or erroneous data. Primarily, this involves taking samples of data and scrutinizing key elements within the sample and then subjecting the results to a predetermined statistical test. The mechanics are condensed into one number which is compared to the sample results. Based upon this comparison, the sample is either accepted or rejected.

Basic Design Approach

Program operators, evaluators and planners have served as key contributors to the second generation system design. Such an approach was necessary since many evaluators have learned that disaffected operators can sabotage even the best designed evaluation effort and control device. Moreover, the steady state evaluator/operator conflict was substantially reduced by developing sound communications and interpersonal relationships with operators.

The following principles played an integral role in the design of

the proposed BAMMIS:

1. Measures were keyed to specific goals, objectives and operational indicators.
2. Simple measures were favored over more complex measures.
3. The costs of obtaining information were reasonable.
4. Objective quantitative measures were favored over subjective judgments.

Evaluation Measures

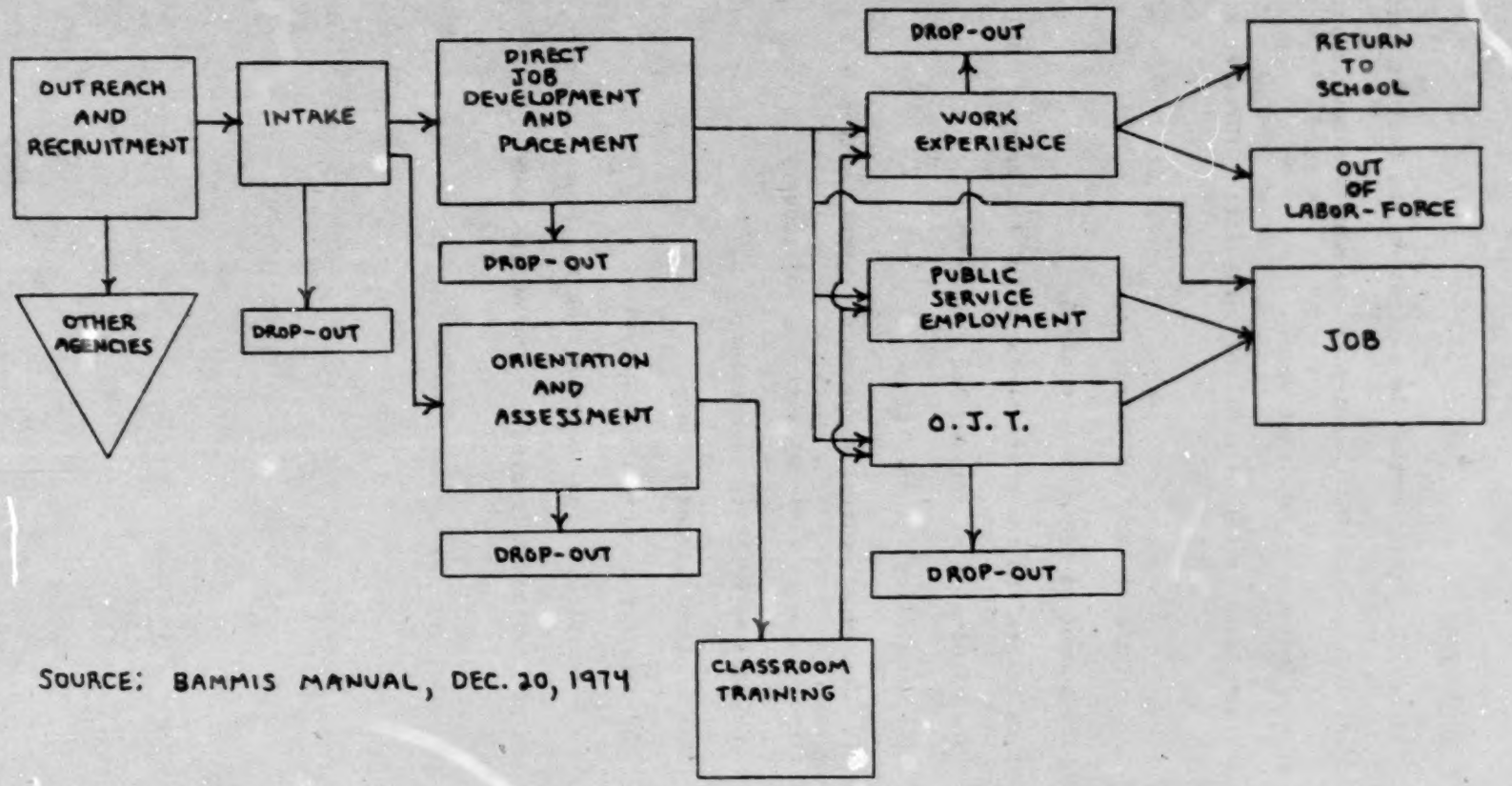
The principal types of evaluation measures relate to program inputs, processes, outputs, and impacts. Input-measures define the inputs of resources into a prescribed process designed to achieve a specific set of outcomes. Examples of input measures are staff salaries, equipment costs, supplies, personsentering a program, overhead costs and so forth. Process-measures seek to characterize the process employed to produce specific outcomes. They track flows of perons through a series of services, utilization of system capacity and movement out of and between components of the system. Examples of process measures include average daily attendance, enrollments, component completions, rates of aptitude or attitudinal changes, number of terminations by reason, student-teacher ratios, etc. Output-measures describe the result of the process on persons moving through the CETA system and the change in enrollee characteristics which best relate to employability in the labor market. Examples of output measures include placement rates, change in wage and income levels, changes in skills and educational attainments and attitudinal and behavioral changes. Impact-measures describe the programs positive, negative, and net effect, intended as well as unintended on the overall

target group, or system after allowance for non-program caused effects. Examples of impact-measures include cost-benefit ratios, discounted income streams, reduction in the unemployment experienced, etc.

Figure 3 exhibits the environment in which the above mentioned measures take place.

FIGURE 3

BRIDGEPORT MANPOWER CONSORTIUM




SOURCE: BAMMIS MANUAL, DEC. 20, 1974

Decision to Automate

At this point, it is worthwhile to mention the factors that were instrumental in the decision to automate the manpower management information system. The most significant were:

Factors related to the size of the jurisdiction (Greater Bridgeport Area).

a) The volume of expected enrollees.

b) The amount of money to be managed.

Factors related to the characteristics of the manpower delivery system.

a) The dispersion of service locations.

b) The complexity of operations.

c) The degree of central management control desired.

Factors related to rational analysis and inquiry.

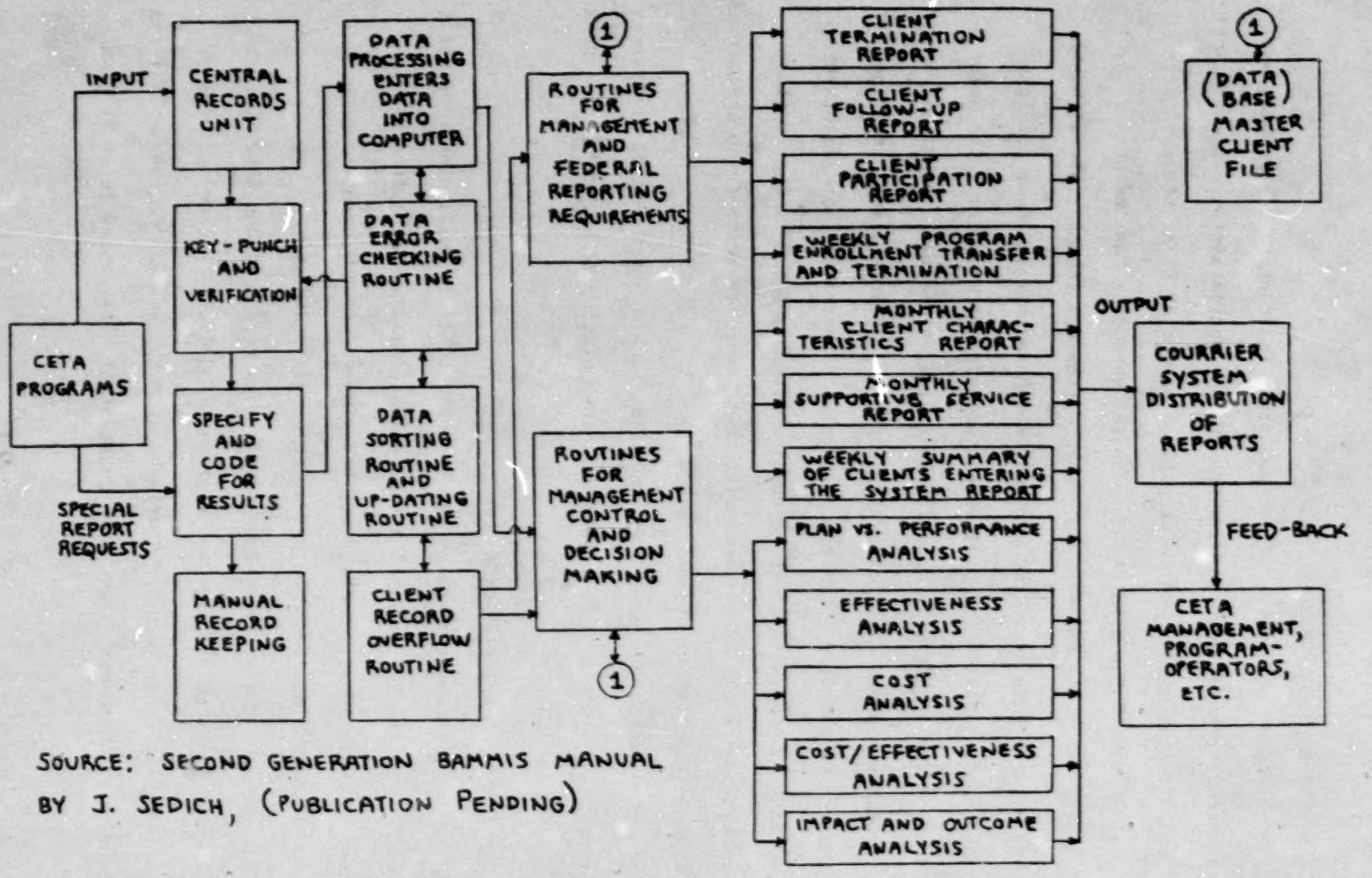
a) The need to evaluate operations.

b) The need for better planning.

c) The need for quantitative analysis.

Figure 4 exhibits a flow-chart showing the flows of inputs, processes, outputs and generation of reports for the entire BAMMIS.

FIGURE 4
CETA SYSTEMS FLOWCHART




SOURCE: SECOND GENERATION BAMMIS MANUAL BY J. SEDICH, (PUBLICATION PENDING)

Previous Studies and Efforts to Date

A number of efforts have taken place in order to design one complete and comprehensive manpower management information system. Due primarily to the decentralized and decategorized nature of CETA, these efforts were in vain. The efforts, were on the part of a few independent consulting firms and their systems were ultimately incompatible with the majority of CETA reporting systems, which had already been developed. In order to utilize the available consulting firm systems, the prime sponsor was required to drastically revise an already operational reporting system, data collection forms and in some cases, the types of data to be gathered. Program operators, planners and management were already at home with their respective sytems and the reorganization effort that would be required with these complete ready-to-go systems cancelled out their desirability.

Moreover, upon careful examination, it was found that these systems were in fact not as comprehensive as they claimed to be, and left a great deal to be desired.

Department of Labor Efforts

The Department of Labor has recently funded a small number of pilot efforts to develop evaluation and automated management information supporting systems. Bridgeport, has also received a grant to develop its own automated manpower management information system.

None of the above systems were carbon copies of any other system. The difficulties and problems that were found with systems offered by consulting firms, have also surfaced with the systems developed by prime sponsors. Moreover, there were substantial differences in their data

collection instruments, analytical algorithms, file structures, report generator packages and in many cases, their analytical capabilities. In short, each prime sponsor developed a tailor-made system to cope with their own local realities and all of these systems therefore display a great many dissimilarities when compared to each other.

Plan Versus Performance Analysis

BAMMIS utilized the following managerial structure and logic:

1. Manage by exception. Plan versus performance analysis indentifies a large number of deviations from the plan. The time consuming, skill demanding intensive treatment implied by managerial monitoring need not be given to each and every deviation. Only exceptional deviations in performance are attended to.
2. Being systematic. The managerial monitor does not have all the time in the world to distinguish cause from effect. The objective is to get back to planned levels. The automation aspect greatly enhances this principle.

Dealing with Variance

Whenever problems arise where there is a serious conflict between plan versus performance standards, the planner calls the appropriate personnel responsible, including the program director and requests reasonable explanations. After the calls are made the planner has a smaller list of items requiring on-site monitoring inquiries. Such an approach saves time and strengthens the evaluator/program director and evaluator/operator relationships.

The word "evaluation" can traumatize operators. A good way for the evaluator to deliver bad news is to develop "no surprises" policy.

The evaluator provides program operators with advance notice of adverse findings prior to more serious action. The "no surprises" policy allows the operator to prepare a response to the evaluation findings, which is more likely to deal with substance rather than to be surprised in a last stand, or face-saving defense. The method provides a low-level channel for conveying information. If the problem persists, the program director is prepared to answer questions. It is not the first time he will have heard of it. At this stage, it is very likely something concrete will be done.

Specify Objectives

Carefully written statements of agreed upon objectives in the sub-contracts make managerial monitoring and negotiating compliance a managable task. There must be a specific plan standard. Clear and specific objectives and standards not only allow for easier measurement and evaluation, but further provide clear and easily understood requirements to strive for. Later, at evaluation time, they cannot be misconstrued.

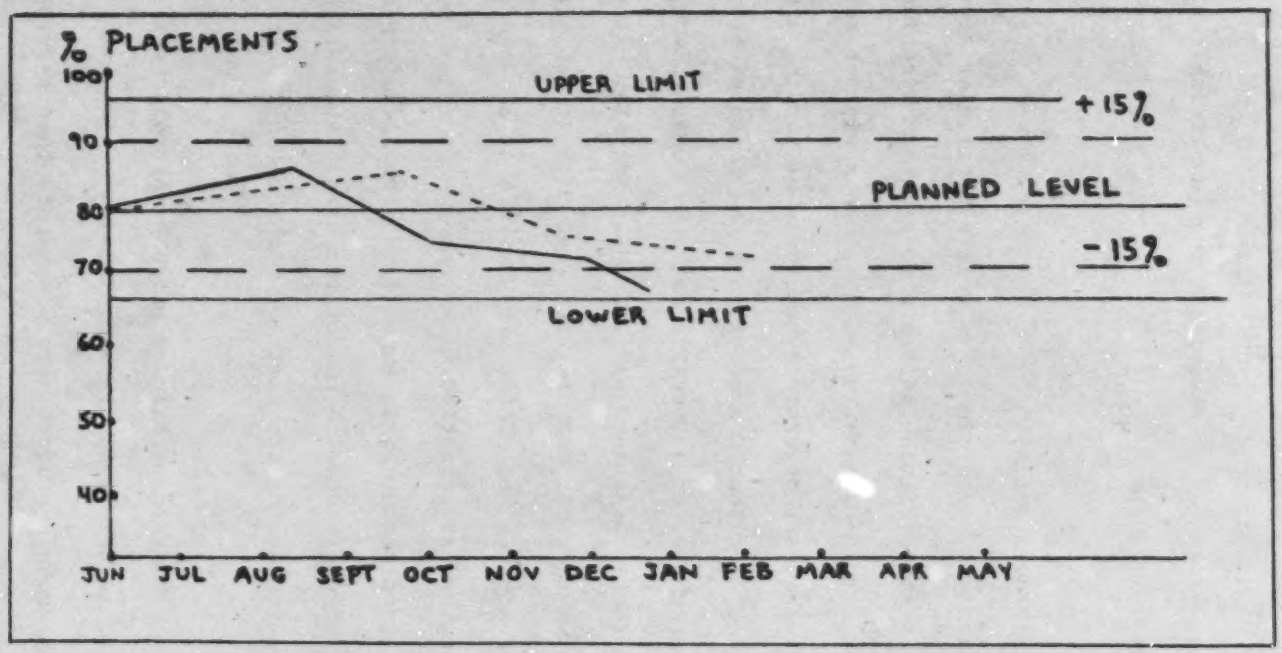
Measurement Methodology

The use of absolute numbers in setting planned levels and plan standards can result in meaningless plan versus performance analyses.

Variable control limits using a plus or minus concept were utilized and allow a performance chart (figure 5) to be created and continuously updated as results arise. Even if in a given period a certain variable is outside the permissible boundaries, rather than simply rejecting this state of matters and taking serious action, the evaluator may see why this is so and may not need to take immediate corrective action.

Moreover, the second generation system places emphasis and directs attention to client income changes, unsubsidized placements and terminations

FIGURE 5
PLAN VERSUS PERFORMANCE CHART




A PERFORMANCE CHART TO BE USED BY PROGRAM OPERATORS, PLANNERS AND MANAGEMENT. THIS CHART ILLUSTRATES THE VARIABLE PLACEMENT.

SOURCE: SECOND GENERATION BAMMIS MANUAL, BY J. SEDICH. (PUBLICATION PENDING)

from unsubsidized employment. Educational upgrading, attitudinal and behavioral factors and their implications are addressed at a very rudimentary and non-analytical level. The reason is that the latter are very difficult to quantify.

Three approaches were used to accomplish the quantifiable phase:

1. Effectiveness analysis
2. Cost analysis
3. Cost-effectiveness analysis

Effectiveness analysis determines how well a particular service strategy or component is performing relative to program objectives and in relation to other service strategies or components without regard to related costs. Cost analysis determines the costs of serving a specific target group, program, or client and determines the costs of providing a specific service or achieving a specific outcome. Cost-effectiveness analysis combines effectiveness analysis and cost analysis. It estimates the relationship between result measures and cost measures of alternative services and service strategies. These measures are taken immediately before and after program participation.

The above mentioned measures, in summarized form, permit planners to answer a variety of questions. A few of the possible questions follow:

- Which subcontractors do the best job with On-the-Job Training (O.J.T.)?
- Does O.J.T. or classroom training produce more placements in the aircraft industry for group X?
- Does serving group X produce more placements than serving group Y?
- Which subcontractors are most cost-effective?

The analysis of change under each control variable ranges from a

relatively simple examination of percentages and simple computations to the use of analysis of variance and multiple regression techniques.

Effectiveness Analysis

A comparative approach is utilized. Suppose an evaluator desires to compare effectiveness of two subcontractors, more than two are possible. The proposed automated system performs the following once the evaluator specifies the variables of interest as follows:

Definition of variables:

1. Dependent variable - Placement in unsubsidized related job at, or above its prevailing local wage. "Success" or "failure" are used to identify the dependent variable.
2. Independent variable - Enrollment of group X clients in programs operated by either of two subcontractors.

The analysis consists of the steps shown in figure 6.

This illustration shows two subcontractors being compared, but in practice, all subcontractors are compared simultaneously. Moreover, the same procedure can be applied to programs, and common service strategies existing within the system. The illustration exhibits the effectiveness of serving group X by subcontractor. A close examination shows that while both subcontractors produce more successes than failures with group X trainees, subcontractor B is more successful.

While the above types of analysis may be utilized, focus is directed upon two measures for each inter-program component:

1. Component completion ratio
2. Training-related placement ratio

Ultimately, the evaluator might compare the effectiveness of different subcontractors, programs and components in producing component completions

# FIGURE 6

EFFECTIVENESS OF SERVING A PARTICULAR GROUP BY SUB-CONTRACTOR

| EFFECTIVENESS | SUB-CONTRACTOR A | | SUB-CONTRACTOR B | |
|---|---|---|---|---|
| | N | % | N | % |
| SUCCESS | 42 | 58 | 60 | 83 |
| FAILURE | 30 | 42 | 12 | 17 |
| TOTAL | 72 | 100% | 72 | 100% |

SOURCE: SECOND GENERATION BAMMIS MANUAL (PUBLICATION PENDING) BY J. SEDICH

and training related placements for different participant groups.

Cost Analysis

BAMMIS cost analysis, establishes with a high degree of precision the costs of serving individual clients and achieving specific outcomes. Six types of measures are used:

1. Rates of expenditure
2. Cost distributions
3. Costs per unit of time
4. Costs per service unit
5. Costs per unit of partial progress
6. Costs per immediate outcome

Rates of expenditure measure the speed at which an allocation of money is being depleted. Cost distributions measure the portion of total resources allocated to a particular function. Cost per unit of time measure costs per per man-weeks, costs per man-months, etc. Cost per unit of service measure the cost of services received by an individual client and comparing different providers of the same, or similar services. One unit of medical services, one unit of counseling, etc. The cost per participant and cost per enrollment are also within this category. Cost per unit of partial progress measures those aspects of components which have a specified completion point, or a competency objective short of employment. Examples include the cost per reading level change, educational level change, etc. The cost per immediate outcome measure is usedto gauge the cost per placement, cost per job entry, cost per positive termination, etc. These basic cost measurements are used to compare activities, components and subcontractors and these unit costs play a role in decisions to continue or change the funding to specific programs or projects.

Figure 7 illustrates this, and figure 8 shows a cost/placement relationship. Cost/completion, cost/job entry, cost/positive termination, and others are included and available to each program or component.

The Financial and Tracking System Split

The client tracking system and follow-up procedure which includes all client inter-system movements and labor market movements, is handled by the prime sponsor. The financial management system is handled by the Comptroller's Office at City Hall. At the present time, the financial management system handled by the Comptroller's Office is not in proper form, or extensive enough to allow BAMMIS to accomplish the required tasks. This split presents a definite problem in integrating information on clients with cost data.

One possible way to eliminate this problem, is to require that the planning authority be able to assign costs to particular service strategies, clients, programs and subcontractors. In order to achieve this objective, the following cost assignment procedure must be followed:

1. A common measure of service for each type of service be provided. (This refers to the six measures previously mentioned).
2. The units of service received by each client are recorded separately.
3. The total number of units of service delivered to clients by each component over specific time periods are recorded.
4. The total costs incurred by each component for each type of service over a specific time period are recorded.
5. The time periods used for recording service units and service type costs, are synchronized.
6. The records of service to each client and the service delivered and cost records of each component are kept in retrievable form (computer data-base).

## FIGURE 7

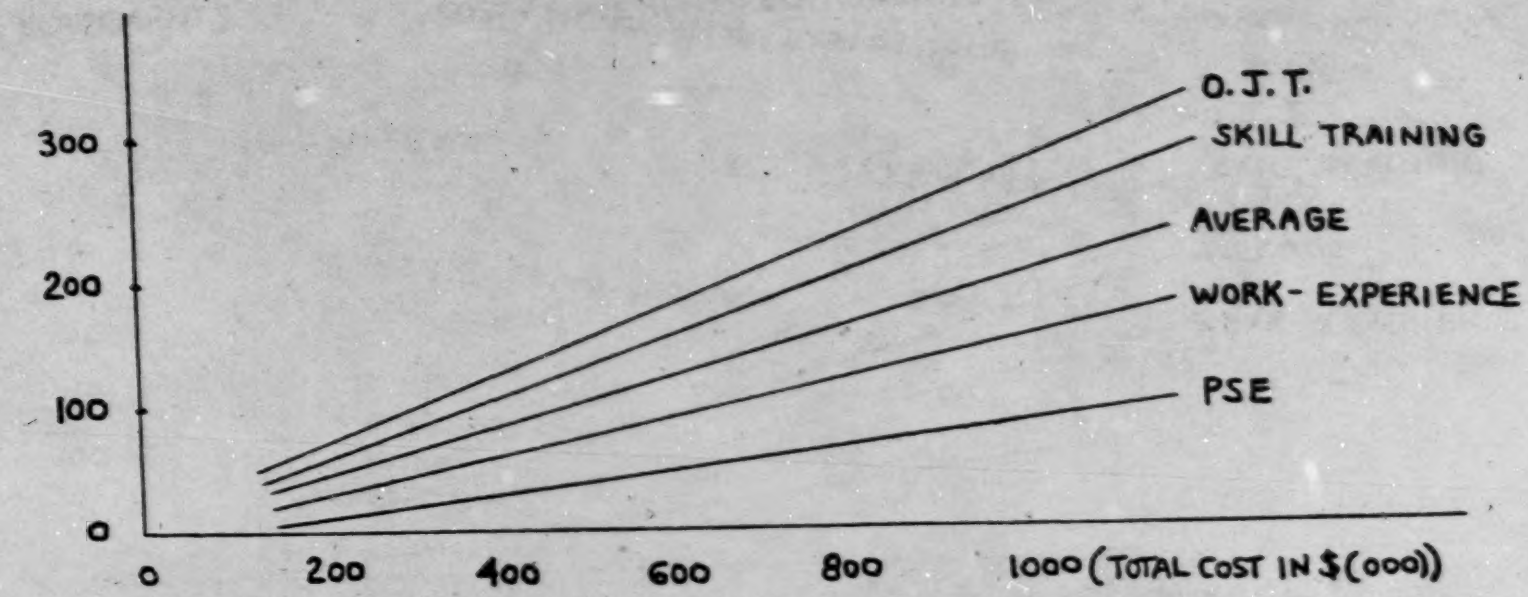
## COST ANALYSIS MEASURES OF FOUR PROGRAMS

| MEASURES / PROGRAMS | COST PER PARTICIPANT | COST PER COMPLETION | COST PER PLACEMENT |
|---|---|---|---|
| 1. PUBLIC SERVICE EMPLOYMENT | $ 8,000 | $ 8,889 | $ 10,458 |
| 2. CLASSROOM SKILL TRAINING | 3,500 | 4,118 | 4,575 |
| 3. O.J.T. | 2,000 | 3,077 | 3,846 |
| 4. YOUTH WORK EXPERIENCE | 2,000 | 2,667 | 5,333 |
| AVERAGE | $ 3,875 | $ 4,688 | $ 6053 |

SOURCE: SECOND GENERATION BAMMIS MANUAL, BY J. SEDICH. (PUBLICATION PENDING)

FIGURE 8

COST / PLACEMENT RELATIONSHIPS




A SIMPLE AND EFFECTIVE DEVICE TO AID IN THE DECISION-MAKING AND PLANNING EFFORTS. BAMMIS PROVIDES THE DATA NEEDED TO GENERATE SUCH GRAPHS.

SOURCE: SECOND GENERATION BAMMIS MANUAL, BY J. SEDICH. (PUBLICATION PEND.)

Allocation of Overhead

The component cost unit, as used in local manpower operations is analogous to the cost center concept employed by many cost accounting systems in private enterprise. Moreover, such an approach allows the evaluator to assign a significant portion of total operating costs to individual clients. The method for pro-rating these costs to individual clients is simply to compute the proportion of total costs, minus overhead costs incurred by each component unit and the resulting percentages are used to prorate overhead costs across components.

The given cost assignment procedure yields an expected number of service units per client, expected number for each service unit, etc. These expected figures substantially aid in future budgeting efforts.

Cost-Effectiveness Analysis

Cost-effectiveness analysis integrates the findings of effectiveness analysis and cost analysis in order to determine what results different service strategies achieve for the funds expended on them. The general form of the cost-effectiveness formulation is the ratio of results to costs:

$$\frac{\text{Effectiveness Measure}}{\text{Average Unit Costs}} \times 1000 = \text{Cost-effectiveness Measure}$$

The effectiveness measure is an absolute number, that is if it equals 80% the formula utilizes the number 80. Cost-effectiveness ratios are used to compare major program categories. The proposed system utilizes measures such as completion rate, placement rate, pre-post training wage differential, training related placement rate and measures of educational and skill level changes. Consider the placement rate as an example, the

proposed BAMMIS accomplishes the following analysis if three service sequences are being compared:

1. O.J.T. (Service sequence A):

$$\frac{\text{Placement Rate}}{\text{Average Cost Per Enrollee}} = \frac{63}{\$1800} = .035 \times 1000 = 35$$

Cost-effectiveness Rating = 35

2. O.J.T. (Service sequence B):

$$\frac{\text{Placement Rate}}{\text{Average Cost Per Enrollee}} = \frac{84}{\$2400} = .035 \times 1000 = 35$$

Cost-effectiveness Rating = 35

3. Classroom (Service sequence A):

$$\frac{\text{Placement Rate}}{\text{Average Cost Per Enrollee}} = \frac{72}{\$1800} = .040 \times 1000 = 40$$

Cost-effectiveness Rating = 40

In this comparison, the classroom alternative yields the highest cost-effectiveness rating. Eventhough other alternatives have higher placement rates derived from the effectiveness analysis. Their higher unit costs drive down the cost-effectiveness rating.

Overall Performance Rating

The various singular effectiveness measures multiplied by their respective weighting factors are summed to form an effectiveness index. The effectiveness index is then multiplied by a cost defined as:

$$\text{Cost Factor} = \frac{1 - \text{Average Unit Cost Per Client in Program}}{\text{Highest Existing Program Cost in System}}$$

The result is an overall performance rating for each program being compared. Furthermore, the above mentioned procedure has the distinct advantage of being understood by just about everyone who needs to deal with it. Moreover, the automation effort for such a procedure is relatively straightforward and easily programmable.

The factors to be utilized and their respective weights are given below:

| FACTOR | WEIGHTING COEFFICIENT (Percent) |
|---|---|
| 1. Employment (Placement Rate) | 40 |
| 2. Follow-up Rate | 5 |
| 3. Retention Rate | 5 |
| 4. Excess of Placement Wage Over Poverty Level | 30 |
| 5. Actual versus Planned Performance | 20 |

These factors combined additively form the effectiveness index. The product of the effectiveness index and the cost factor yields an overall performance rating for each program compared.

Overview of Impact and Outcome Evaluations

The objective of impact and outcome evaluation is to measure the achievement of goals. Both impact and outcome evaluation arrive at their measurements by comparing the situation after program intervention has taken place. The key difference between the two is the level at which measurement is attempted.

Impact evaluation has the broader scope. It seeks to gauge the effect of an intervention on the entire population experiencing the problem. Outcome evaluation has a narrower perspective. It seeks to gauge the effect

of an intervention on the population experiencing the intervention (e.g., receiving services). It requires only that the evaluator track change in persons who participate in a particular intervention, then compare it with the experience of a similar group of non-participants.

Program activities are prescribed on the basis of assumptions, theory or knowledge that the activities will lead to the desired longer term outcome. In the evaluative study, the chain of causality upon which the prescribed program activities are based takes the form of a hypothesis. In particular, if activities A,B, and C are undertaken then X,Y, and Z changes are likely to occur.

Proposed BAMMIS and Outcome Evaluation

BAMMIS accomplishes the following:

1. Measures the achievement of goals
2. Considers longer term effects of the program on its target (Follow-up reporting accomplishes this)
3. Compares pre-treatment measures with one, or more post-treatment measures to determine the gross change experienced by the subject of the intervention.
4. Obtains an estimate of the net effect of the program and makes provisions for separating the effects of the program intervention from changes which would have occured without program intervention.
5. Focuses on effects of persons who actually participate in CETA.

Only the ultimate goal of the CETA system is given consideration. Increases or decreases in wage and salary levels of CETA participants after leaving the system is focused upon. CETA participants constitute the target group in all that follows. The success with which the ultimate CETA goal is reached is evaluated.

Procedure

The methodology that is utilized is listed below:

- A target group is identified and the goals in terms of changes in wage levels are identified.
- A study sample is drawn from the parent population composed of the entire target group for a given program.
- The sample is randomly assigned to either a treatment group or a control group.
- Preprogram measures are taken for both groups and characteristics which the program intervention is to change.
- The treatment group is exposed to the program while the control group receives no service.
- At the conclusion of the treatment, post-measures are taken for both groups. The interval between completion of the program and the post-tests is one year. One year is sufficient time for a stable condition to develop.
- The pre-measure to post-measure changes are then determined for each group and the changes experienced by the control group netted from the treatment group.
- The result is then interpreted as the effect of the program. The net change is attributed to the program and the problem is either reduced, not changed, or increased by the amount of the net change.

Comparison Groups

The control group does not make matters more expedient or lowers costs of measurement, but a simple before-after comparison allows the evaluator to measure absolute change in the particular characteristic being measured.

Moreover, if a change has occured, it is not sufficient to determine how much of the change can be attributed to participation. A control group is the only definite way. The analysis need really be performed on a yearly basis, the additional effort and costs associated with the control group are well worth it.

The following comparison groups are used by the proposed BAMMIS:

1. Individuals who register for CETA programs, but are subsequently found to be ineligible (particularly because the available slots have been exhausted).
2. Individuals who are found eligible for a CETA program, but who leave the program before assignment to a specific project and without receiving participant services.
3. Individuals who actively participated in the CETA program, but who terminated prior to completion of training.
4. Individuals registered with the employment service who are not enrolled in CETA.
5. Individuals registered or participating in other manpower programs.

Characteristics and Significant Measures

The most difficult characteristics to match in control groups probably relate to motivation and attitude. Multiple regression techniques offer significant aid in controlling differences between comparison and treatment groups. BAMMIS utilizes multiple regression and random sample design to deal with the problem and focuses on the following measures of outcome evaluation:

1. Wage and income changes.
2. Improved stability of employment.

It is strongly believed that only these two measured are required

as opposed to having a large number of measures. Measures such as improved education levels, skill levels, decreased anti-social behavior, improved self-image, etc., are really unnecessary since they are most probably a subset of the above mentioned two measures and significantly correlated.

Definition of Costs and Benefits

The following costs and benefits are addressed by the proposed BAMMIS:

1. Social benefits: increase in before-tax earnings.
2. Social costs: costs of instructional and administrative resources, supportive services, unreimbursed expenses of the participant over and above any expenses he would have incurred had he not been enrolled in the program and foregone earnings of the participant (transfer payments) are excluded from costs, using this viewpoint as representing simply a problem in allocative efficiency rather than any marginal change in national productivity.
3. Individual benefits: increase in after-tax earnings, stipends, value of supportive services received.
4. Individual costs: foregone earnings and other income which the participant would have received had he not participated in the program.
5. Government benefits: increases in taxes (all federal taxes, income, social security) paid by the trainee. Any reduction in transfer payments (unemployment compensation, public assistance, or social security disability benefits).
6. Government costs: program expenses borne by the Federal government (including transfer payments), value of supportive services furnished to the client and reductions in taxes paid by the

participants during the time of program enrollment.

Other cost and benefit items related to health, nutrition, crime, etc., may be identified, but the methods for measuring many of these are highly experimental at this point in time and are, therefore, not attempted by the system.

Methods and Rationale

As in outcome analysis, the increase in impact analysis is measured pre to post and contrasted with a comparison, or control group. The conventional approach to comparing the value of a dollar in the future benefits, with a dollar in present costs is utilized (discounting). Discounting adjusts the estimated future stream of earnings to their present value so that they can be compared to costs appropriately. A rate of 6 percent is used.

BAMMIS used the internal rate of return method, since this method calculates the discount rate required to equate the present value of the future stream of benefits to the present value of costs. If the resulting interest rate is greater than the "opportunity costs" of the program, using the above mentioned six costs, the investment is worthwhile.

Problem and Solution

A problem exists, since it is imperative to carry follow-up far enough into the future to capture the full benefits of the program. In particular, benefit cost analysis related to increases in income are very significant and must be obtained. There is a significant obstacle in the form of available sources for obtaining the required data for this type of analysis, particularly at the local level. Several options are available to measure the full benefit stream:

1. Longitudinal follow-up.
2. Use of Social Security data on persons similar to manpower program enrollees.
3. The use of existing longitudinal profiles compiled in previous evaluations.

BAMMIS utilized all three options of data including the Continuous Longitudinal Manpower Survey (CLMS), a new Manpower Administration effort to solve the comparison group problems of local evaluators. CLMS is a Department of Labor effort to evaluate CETA. The Bureau of the Census collects socio-demographic and post-program labor market experience data on a national sample of 15,000 CETA participants. The data collected is compared with data on a matched group of persons surveyed in the Current Population Survey (CPS) of the Census for a measure of impact. The CPS sample is then matched to the CLMS sample on the basis of age, sex, ethnicity, education, veteran and marital status, poverty and labor force status and family income.

The Need for an Effective and Efficient Management Information System

CETA managers within the Bridgeport area have recognized the need for an effective and efficient comprehensive manpower management information system. At the present time, the prime sponsor uses a manual management reporting system for manpower programs. The manual system cannot monitor all individuals with the CETA system from the time they enter the system, during their stay in the system and for a period of one year after they leave manpower programs to enter employment, school, military service, etc.

In its present form, the manual system barely satisfies federal,

consortium and program reporting requirements. It cannot cope with today's environment and does not have the capabilities of a viable management information system since it does not effectively monitor the activities of operating programs, both internally and from the administrative component, does not effectively aid in meeting program goals or objectives and is incapable of determining optimal operating activities to satisfy these goals.

The Proposed System

The second generation system is a tailor-made manpower management information system designed not only to meet, but rather exceed management's expanding requirements.

The second generation automated Bridgeport Area Manpower Management Information System is capable of effective and efficient federal reporting, program management, control, evaluation and offers considerable aid in the planning function. BAMMIS was designed for a fluid environment. BAMMIS can be processed at the City of Bridgeport Data Processing Department in City Hall utilizing an I.B.M. 370/145 computer.

## CHAPTER III

## SURVEY OF THE LABOR MARKET SUPPLY/DEMAND SECTORS

### Introduction to the Labor Market Survey

A survey directed at the Greater Bridgeport Labor Market has been totally designed. The statistical computations and methods to summarize the survey's results were computer programmed and tested for integrity. The primary purpose of the survey was to extract pertinent information from two significant labor market sectors. The first was the labor supply sector and the second was the labor demand sector. Upon completion of the survey, the resulting information was to serve as an aid to further close the large "ignorance-gap" that exists between labor market supply and demand sectors.

A multiple stage survey design was utilized. Stratification by type of industry and clustering by size of firm was utilized. A comprehensive manufacturing directory provided exact location, type and size of each firm within the desired area. These firms were identified on a geographical map representing the area in question. Precisely the same logic was utilized for the non-manufacturing sector (service firms). The two sectors constituted the demand component for the survey.

Socio-economic profiles of workers at all levels in these firms including broader economic information received from personnel directors with respect to short and long-term plans, as well as their personal opinions on key-matters made-up the bulk of the data to be gathered from the demand sector.

The supply sector was identified by two segments. The first segment was composed of CETA clients and those who had applied for CETA services. The second segment included all those registered at the employment office and for the most part those who would be entering the labor force in the very near future (high-school graduates, training institution graduates, service related discharges, etc.) A simple random sample design was utilized for the supply side. A sample large enough to assure a ninety-five percent confidence level in results was planned.

The questionnaires for the survey were nearly identical for both sectors and included questions regarding age, sex, race, level of education and experience, hourly wage, attendance performance, etc. The bulk of the data gathered was then to be broken down by occupational codes. Moreover, upon completion, the data was then to be subjected to various types of statistical procedures and tests, including mutiple regression techniques upon key-variables. This was to be accomplished by a computerized statistical package using the Fortran computer language.

The ultimate results would display disparities between the supply and demand sectors. These variances would more clearly place into perspective the possible reasons for the large gap. Planners could then plan more effectively. The statistical information generated by the two segments in the supply sector would be compared to the information yielded by the demand sector. Inter-sector comparisons with the supply component would be attended to also.

Characteristics of those employed and those not employed including those about to enter the labor force would be identified and correlated to significant factors causing the problem. Remedies could then be

initiated (proper manpower programs) using the current summarized job data generated by the survey.

Need for a Labor Market Survey

Previously performed research has clearly pointed out that a large "ignorance gap" is evident between the supply-of and demand-for components in the labor market. This gap is primarily made-up of private employment agencies, state employment agencies, personnel directors, manpower planners, high-school advisors, job-seekers, etc. With the exception of job-seekers (supply sector), the above mentioned intermediaries are for the most part not well informed to the local labor market realities and, therefore, rely on personal judgments and intuition to make costly decisions. The job-seeker is also uninformed, but he has no alternative.

A survey of this type can only begin to partially close this large gap. On the macro level (state and City side), the problem is astronomical and requires a highly complex and integrated communication system in place prior to being able to see what is happening and controlling it. At the micro level (CETA level), the survey can substantially erase this gap for the CETA planners and administrators.

Relevant and timely information can be available to permit planners to make effective and efficient decisions based on skillful planning using sound statistical information. Why train fifty clients in a manpower program for a machine trade when the demand sector indicates little need for machinists now and in the near future and the supply sector transmits information reflecting one-thousand skilled machinists out of work and seeking employment. This may be an exaggeration, but it points out what is not so far from reality.

Planners need timely and relevant information if they are to perform their functions effectively. The survey can act as an initial source of information upon the entire Bridgeport labor market supply and demand sectors. This may then be translated into CETA policy alternatives for the planning and decision-making functions.

Thereafter, only monthly mini-surveys focused upon key industry groups are required to up date the information base. These mini surveys combined with information from the initial survey can provide meaningful and timely information for the decision-making process.

Problems with the Survey

Various problems have surfaced and should be pointed out. Collection of data on the supply side and more specifically on local CETA clients was relatively trouble free. The problem arose in the demand sector. Private industries are reluctant to open their personnel files to outsiders, or disclose company long-range plans and policies. Generally it was concluded by our research that aside from the reasons already given, the main problem was a firm's fear that a survey may reveal non-compliance with hiring practices, promotion methods, pay scales and generally non-conformance to stated regulations.

The above problem precluded any genuine possiblity of a complete and thorough survey. Cost and time factors to the firm also played a negative role. Ultimately the above mentioned obstacles were hurdled successfully. An initial letter of explanation with follow-up telephone contacts broke a lot of ice. Such a method permitted key company officials to place confidence in the survey when they better understood it's objectives. The sampling was then restricted to cooperative firms. Moreover, these

firms consisted of the most influential and constituted for the most part, all of the major firms that were in the original sample. The sample was still representative enough to reflect the entire labor market.

Other problems of a political nature were also encountered. The most significant was that from key administtative figures at the local government level. Their attitudes seemed to be that of "indifference" and they were content to continue to have planners make decisions based on what was largely irrelevant data. Such strong opposition at this level was difficult to circumvent. Education may be the solution.

The Survey and the Near Future

Assuming additional funding is received and an interest in the survey is taken, the survey in it's entirety is awaiting to be implemented. In order to implement the survey in the near future, minor revisions and modifications are necessary. The basic survey design approach will have to be reconsidered. This is due to a dynamic labor market structure and the economic situation, which has drastically changed from the time the survey was initially designed. These problems can be easily attended to and eliminated. The monthly mini-survey design will also require slight alteration in order to satisfy the changing parameters of a dynamic labor market.

CHAPTER IV

Part I

# THE AUTOMATED SHIFT AND SHARES MODEL

## Introduction to the Shift and Shares Model

In the past two decades, Bridgeport's economy has experience a set of shifts in the sectional distributions of employment, noticeably the significant decline in the manufacturing sector and a rise of service sector employment. These shifts affect the competitive position of Bridgeport's workers by changing the kinds of jobs available. The influence of technological and market forces are also reflected which originate outside the Bridgeport labor market, thus requiring Bridgeport's employment pattern to adapt to these changes.

The most significant influence on the operation of Bridgeport's labor market is the macro-economic performance of the national economy; reflecting the relationship between the aggregate demand for labor and the level and rate of growth of the national economy. Consequently, persistently high levels of unemployment acts as an indicator of inadequate performance.

The shift-share model investigates the extent to which the rate of growth of Bridgeport's industries have kept pace with the Nation's/New England's/Connecticut's aggregate growth during the preceeding three decades. The shift-share model states that the change in local growth in an industry is a function of three components: The change in national growth, the particular mix of industries in the area, and the change in the comparative advantage which a local industry has in a particular sector.

The change of a local industry's ingredient is partitioned into three collectively exhaustive components, each of which represents a different feature of the local economy. The first component known as the national growth is the change a local industry would have had if it had changed at the same rate as the national, or other benchmark level for all industries combined. If the nation is used as a benchmark, it is usually always positive reflecting a steady increase in national growth. The industrial mix component represents the change that is always taking place in that particular industry being examined due to the industries dependence on supply and demand, consumer preference, and technological changes. The local share or competitive component accounts for the fact that a local industry is growing at a rate different from the aggregate for that industry due to some advantage or disadvantage the local area has over other areas. The sum of the three components should always add up to the total change over the period.

Need for the Shift and Share Model

The shift and share model was recognized to be an effective urban economic statistical model, primarily for its ability to produce a descriptive account of the economic performance of urban areas with modest data requirements. Since smaller geographical regions have less data available, the shift-share model adapts easily for the Bridgeport area. Furthermore, since the shift-share can be used on a micro or macro level, it can be used to evaluate regions, urban areas, groups (CETA), job positions, etc.

In lieu of the persistent high level of unemployment in the Bridgeport area, CETA funds should be used effectively; and that a long, slow rebuilding process in Bridgeport's employment base is necessary, CETA

dollars can have the most effect if they are concentrated in areas with the most potential for growth (urban). This is where the information provided by the shift-share model can be of use - by identifying those employment sectors experiencing long-term detericration or current instability, an early warning can be provided to job seekers and others making plans based on the vitality of these sectors. Moreover, by identifying those employment sectors currently on the upswing and the most long-term potential, the Bridgeport Prime Sponsor can begin to determine the type of trained workers which will be required in these sectors.

In addition, the need existed for a comparative methodology which would identify and trace the relative performance of key population sub-groups within the occupational structure of the Bridgeport labor market. One of the uses of the shift-share model in Bridgeport is to monitor the ability of disadvantaged sub-groups to move into growth occupations and into more stable employment in the primary labor market.

Problems Encountered

Uniformity of the data was a troublesome area in the analysis. No two sets of volumes of the U.S. Census of Manufactures were alike. Where one set reports data in thousands, the other reports the same catagory in millions. Since the data had to be divided, multiplied, and added on an automated system, the data was transformed.

Another problem encountered was the omission of data. In many entries, data was omitted to prevent disclosure of information to competitors. To solve this problem, a "zero factoring" (no data) mechanism was incorporated into the model whereas whenever a missing item was encountered by the computer it would take the appropriate steps.

Research Methods and Rationale

Manufacturing industry data was first selected to be applied to the shift and share analysis framework for the following reasons:

1. Manufacturing continues to be the dominant economic activity characterizing Bridgeport's economy.
2. Well over half of the entire Bridgeport area labor force is either directly or indirectly associated with manufacturing.
3. A majority of Bridgeport's manufacturing industries are export industries, i.e. their products are for markets outside the labor market area, consequently, the recession has affected the demand for Bridgeport's products. This low demand has significantly contributed to unemployment in the Bridgeport area.
4. Data is readily available for the manufacturing sector for both Bridgeport and the Nation on a consistent and comparative bases.

Data from all two digit S.I.C. code industries were selected. In all, twenty industries were analyzed in the Bridgeport area, ranging from the production of consumer goods as food and clothing to capital goods as heavy transportation equipment and machines.

The analysis of the manufacturing industry consisted of examining eight variables, including: total large and small establishments, total employees, and production workers, payroll, manhours, wages, value added, and capital expenditures. The inclusion of these variables would result in a comprehensive description of the performance of these industries.

Total establishments and establishments with 20 employees or more examines the growth of large and small firms in the Bridgeport area

relative to other regions. To measure the employment level of production workers relative to all employees and with other employees in other areas data of all employees and total production workers data was taken. Payroll, manhours, and wages were analyzed to obtain comparative information on the relative wage increases of Bridgeport employees. Value added by manufacture represents the actual value labor adds to a product. Consequently, it is considered to be a representative value measure available for comparing the relative economic importance of manufacturing in the Bridgeport area among other industries and areas. Expenditures for new plant and equipment measures the amount which Bridgeport manufactures spend to replace worn out equipment, buy new equipment, and add permanent additions and major alterations to existing facilities. The rate at which this takes place indicates the relative strength of local manufactures and the probability of them likely to remain in the Bridgeport area.

Using the above eight variables additional data was created to further present a comprehensive analysis of local manufactures. Value added divided by total production workers yields productivity per worker. Similarly profit was derived from value added-payroll, average wage was derived from wages - total production workers, average non-production worker's wage from payroll-wages/all employees - total production workers, and average hourly wage was derived from payroll-manhours.

Summarizing the results of the shift-share analysis reveals the following:

1. The Bridgeport area enjoys a particular advantage for the production of textile mill products, printing and publishing, primary metals, instruments and related products, and assorted miscellaneous manufacturing products.

2. Connecticut and more so the Bridgeport area were particularly sensitive to Federal contracts.
3. New England did not fair well in many aspects to the rest of the Nation, but the region as a whole did better than Connecticut, and Bridgeport did as well as Connecticut.
4. Those manufactures that showed an exceptional rapid growth are not necessarily key industries in the area, but are instead marginal industries very much affected by temporary market demand fluctuations.
5. Bridgeport depends on outside market forces over which Bridgeport has no control over. A drop in national growth produces a similar decline in local share.
6. An observance is noted that as wages increase, employment decreases.
7. In order to substantiate a one dollar increase in wages, productivity must increase by five dollars. This is observed in almost all the industries. (Possibly related to the multiplier effect).
8. An observance is noted that there is no correlation between profits and capital expenditures, although an increase in capital expenditures leads to an increase in employment.
9. Bridgeport workers were consistently earning less and pay increases were not as rapid as the national average.

The type of information given above is very important to any type of a serious planning effort for the Greater Bridgeport Region.

The Future and the Shift and Share Model

The shift and share model can serve as a guide to policy making. Its capability of measuring relative performances of sectors, can be applied to evaluate CETA programs. By tracing the increment of employment of CETA clients to permanent employment, CETA programs and methods of

training can be evaluated on the basis of comparative success and failure.

The model can also be applied as a projection framework to accurately predict employment and job openings in the near future (a fiscal planning tool). A shift-share framework useful for such analysis is in the form of industry employment in the future period for the Bridgeport area as given by the model is equal to industry employment in the current year changing at the national projected rate, plus the competitive component which is influenced by: prior competitive effect, interindustry effects, prior employment levels of the industry, income, population, and specialization of the area's economy.

Part II

## THE AUTOMATED ECONOMIC INDEX GENERATOR

### Introduction to the Bridgeport Index

The function of an economic indicator is to measure the relative performance by key economic variables. Retail sales, kilowatt hours, bank debits, building permits, and employment were chosen for the Bridgeport index. The reason these were chosen was principally because these indicators for the most-part depict and condense the economic pulse in an area such as Bridgeport. Moreover, these components were ranked by importance - employment (25%), kilowatt hours (25%), bank debits (25%), retail sales (19%), and building permits (6%). As economic activity changes, it registers an index. These register changes can be graphed and the economic activity can then be observed. Recognizing the serious need for measuring the level of economic activity in the Bridgeport area, the above mentioned economic index generator was developed.

Serious drawbacks were immediately encountered. Large volumes of data and a small staff could not handle the task. Furthermore, it was realized that in order for the index to reflect reality, a deseasonalizing routine would have to be added to the index generator algorithm. The previous formula for obtaining the indexes was relatively straight-forward and naive. The extreme number of calculations required eliminated this procedure from being performed manually. Automation of this procedure seemed to be the answer. The automated generator does deseasonalize raw data prior to operating on it, and wherever necessary, a deflating procedure is applied. This makes the month-to-month comparisons more consistent, accurate, and comparable to those published for the State and the Nation.

Need for an Index

Prior to the automated index generator, there was no single measure of the economic status of the Bridgeport area. Those who required knowledge with regard to the local economic welfare could not tell where the economy was compared with previous periods. The exact vitality of Bridgeport's business, or the prospects, or projections of Bridgeport's future were unclear. The automated economic index generator was an attempt to fill this gap. The gap has been closed very quickly. Monthly summarized reports pointing out those areas of high economic activity, economic slumps, or generally where the overall Bridgeport economy is headed are made clear. Inspecting each particular component of the index and its direction of change allows this to be accomplished. Sensitivity studies are under way at the present time to better establish the relationship between the components that make up the index.

The automated system eliminates the possibilities of errors in calculations which were abundant in the past with manual determinations. Often, the results were not obtained in a timely fashion in order to be effective for the planning cycle.

Currently, the automated economic index generator provides the bulk of the information in PERSPECTIVE, a Bridgeport CETA Consortium publication which provides information and analysis of the Bridgeport labor market to area civic leaders, planners, banking institutions, and other groups and individuals participating in the formulation and administration of policies to ensure continuing growth for the Bridgeport area.

Present Problems with the Automated Index

One problem with the index generator is the lack of available and pertinent local data on a timely bases. A very limited amount of published

data exists for the Bridgeport area as well as for other smaller geographical areas. As a result, inquiries into local, state, and federal institutions were made as to whether relevant data of the nature needed were available on a regular basis. The data presently in use is accurate and timely.

Another problem is that the consumer price index used in deflating certain data do not reflect local prices. Currently, the consumer price index is the New York Metropolitan index. Consequently, local monetary values are adjusted to reflect the New York area rather than Bridgeport prices. To solve this problem, a consumer price index for the Bridgeport Metropolitan area should be developed.

The most important problem confronting the effective use of the automated economic index is disseminating the information to local authorities and having them make serious use of it. This problem of awareness is faced by many local community researchers who quickly learn that idealism and realism do not necessarily coincide, and as a result, more effort needs to be exerted to enlighten the political arm. Final decisions should be based on research efforts. Such is not the case, however, and should be corrected.

This gap has been partially closed by the introduction of PERSPECTIVE, a newsletter. To the present, as it has been in the past, policy makers did not listen primarily because good economic information at the local level did not exist. With the introduction of the newsletter, a more positive link between local government decision makers and those who develop and interpret local urban economic information has been created. In addition, by making aware to the lending institutions and other key industries that quality economic information is available, additional

pressure may be brought to the political arm that decisions and research information coincides and should be used in that perspective.

Future of the Automated Index Generator

The automated index generator provides the type of information needed in the Bridgeport area. As it is, the system is capable of handling an enormous amount of data. Although the five indicators mentioned represent for the most part the essential leading indicators of area performance, the system can further be refined to include additional components which further reflect the Bridgeport economy. Bridgeport industrial production indexes, commercial liability indexes, commercial and industrial loans, and consumer installment credit indexes are some of the possible indexes that can be incorporated into the overall system to provide better and more detailed information to meet the special needs of Bridgeport.

The economic index will be continued in the future issues of the PERSPECTIVE newsletter. It will be continuously upgraded and more information concerning the Bridgeport economy will be provided. For the convenience of the reader, the following pages include the December, 1975 issue of PERSPECTIVE, the Bridgeport newsletter which utilizes the index generator as a major source of information.

BRIDGEPORT CETA CONSORTIUM DECEMBER 1975

# BRIDGEPORT AREA ECONOMIC PERSPECTIVE

The economic upturn we've been looking for has come. And gone. According to our revised economic index, shown below, the Bridgeport area economy declined by 8 percent from August 1974 through February 1975. The index did rebound by 4 percent from February to June; however, it slipped back to a **new low of 101.7 in September and shows signs of going lower before the year is over.**

This issue of **Perspective** presents an anatomy of the current recession. We will trace the downs and ups of a variety of economic indicators and provide some indication of what to expect in the immediate future. To spill the beans, we're suggesting that **significant reductions in unemployment should not be expected until the middle of next year.**

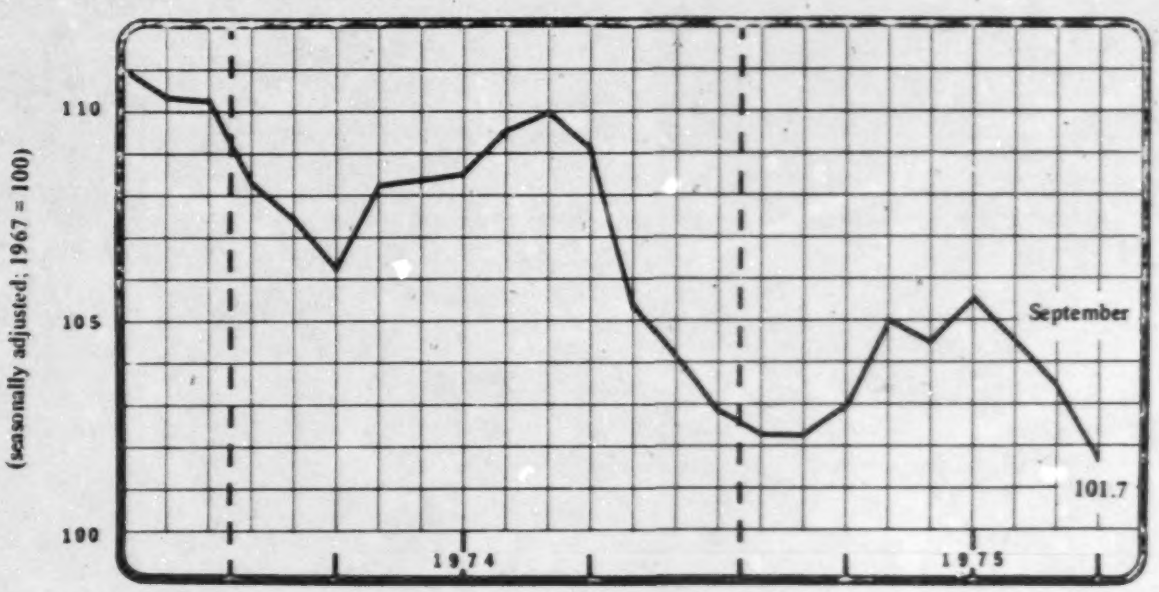
In retrospect, the 1975 recession was not the largest decline in Bridgeport's recent history. The area economy has proceeded in fits and starts since 1967; there have been 9 periods of decline and 9 periods of expansion, including 6 continuous quarters of rapid expansion from late 1971 to early 1973. The two largest declines occurred in early 1973 and late 1969.

Since the 1973 setback, periods of expansion have fallen short of continuing periods of major decline. For example, the index dropped by 7 percent during the energy crisis, rebounded by 3 percent through the 3rd quarter of 1974, and dropped again into the current recession.

However, the fact that this recession follows continuing downward trends simply means that the problems of recovery loom larger. If we focus on unemployment, for example, we are currently 3 percent, or 4000 jobs, below 1970 levels, and the labor force has grown by 4600. We need 8600 jobs just to get back to the 1970 unemployment rate of 7.3 percent.

In order to achieve the national "full-employment" goal of only 5 percent unemployment, we need 11,700 jobs. Since our labor force will continue to grow, "full-employment" in 1980 will require 27,400 more jobs than exist at the moment. That works out to 5500 jobs a year for 5 years. The only recent increases of this magnitude occurred during the 1972 recovery. Thus, **we need something like the 1972 recovery, sustained over the next five years, to meet "full-employment" goals – that is to reduce total unemployment to only 9800 by 1980.**

## ECONOMIC INDEX




The Bridgeport CETA Consortium includes the towns of Bridgeport, Easton, Fairfield, Milford, Monroe, Stratford, and Trumbull.

# ECONOMIC INDICATORS

This has been a year for U-shaped economic trends. Each of the indicators appearing in the composite graph on the next page turned down sharply or was already in a nosedive by the end of 1974, and all but employment appeared to bottom out early in 1975 and begin to move back up.

In fact, the turnaround in retail sales, kilowatt hours, building permits, and bank debits was sufficient to restore nearly 4 percent to the overall economic index by June.

Since June, however, only building permits has continued to increase, and it too will turn down during the winter.

Of most concern is the fact that employment continues to drop and shows signs of going lower through the 1st quarter of 1976. Notice that the October 1974 employment index of 101.5 was slightly above 1973 levels. In fact, 1974 represented the peak in what had been three years of slow recovery from the 1970-1971 national recession. We are already some 2 percent below the 1971 trough. In other words, as employment continues to decline, we come to understand that once again the Bridgeport area faces a long, slow process of recovery from a major economic shock.

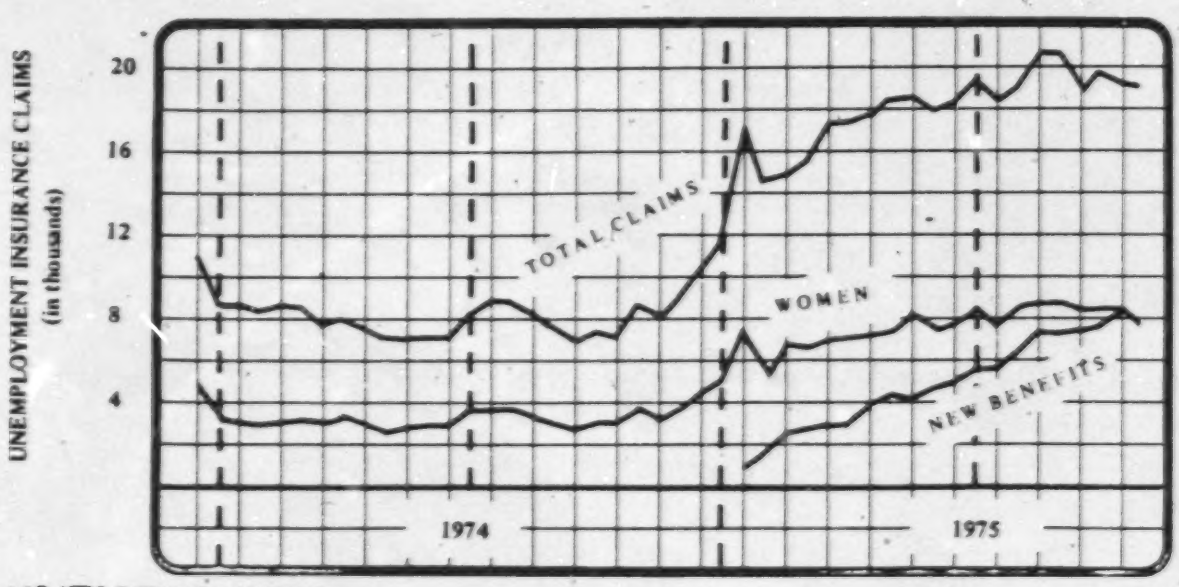
One of the most alarming recent developments is the rapid deterioration in the real value of bank debits in the Bridgeport area. Notice that the bank debit index bottomed out last December and rebounded to a new high of 124 in April.

Since April, however, the index has lost over 12 points, establishing a new low of 112 in September.

The most promising thing we can say about the level of construction activity is that last December's low of 30 was probably the bottom. Notice that the 1975 trend is more or less upward, reaching 44 in September. Construction activity will drop back during the winter, but perhaps not back to the 1974 record low.

Kilowatt hour usage follows a clear seasonal pattern. We use more energy keeping ourselves cool than in generating heat. This is largely due to non-electric heat sources. Nonetheless, until 1973, winter kilowatt hour usage was oncsistently above late-summer usage. With the dramatic increase in energy costs in late 1973 came a reversal of this seasonal pattern. Electric energy use will drop again this winter.

Inflation has moderated to under 9 percent this year, and the real value of retail sales climbed back to 84 in June. The September level of 77, however, was only 1 percent above last January's lowpoint. Unless the Christmas shopping significantly boosts area spending, the retail sales index can be expected to move lower into 1976.




# UNEMPLOYMENT

Total unemployment insurance claims in October were nearly two and a half times the 1974 average. The number of people collecting unemployment hovered around 8,000 through November 1974. With the massive wave of layoffs in December, total claims jumped to 17,000 in January 1975. The unemployment rolls have continued to swell through 1975, reaching an all-time high of 20,245 in July. In October total claims have fallen back to 19,120.

The number of women collecting unemployment, which had averaged 3,000 through most of 1974, climbed to 7,000 in January and continued up to 8,700 by July. Currently, there are 7,900 women, representing more than 40 percent of total claims.

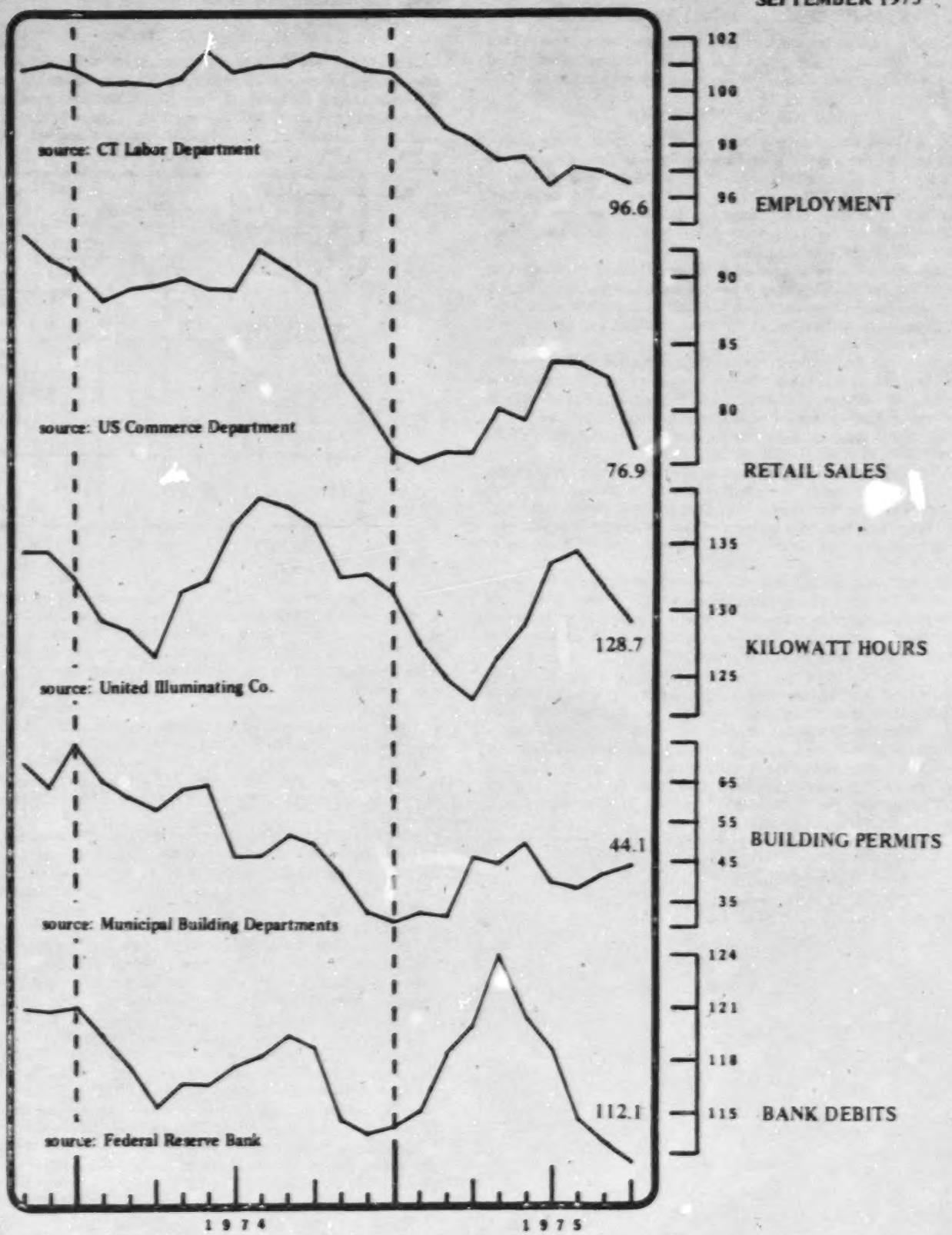
Extended benefits and the Emergency Compensation program became important in 1975 as those who were unemployed in 1974 remained jobless for more than a year. At the end of 1974, only 900 workers were receiving extended benefits. The total number of people receiving extended benefits plus those eligible for the emergency compensation rose sharply through 1975, reaching a peak of 8,200 in September. In October the total receiving such benefits stands at 7,900.

That upturn we've been looking for had better come quickly, because extended benefits for many of Bridgeport's unemployed workers are beginning to run out and over the next several months total eligibility could begin to expire as rapidly as it accumulated last January.

# ECONOMIC INDICATORS

(seasonally adjusted; 1967 = 100)

SEPTEMBER 1975



# ANALYSIS

## THE BRIDGEPORT ECONOMY AT MID-DECADE

**If you're looking for work in 1975 there are two general trends visible over the last five years that you should know about, since they will affect your chances of finding a job with a future.**

### LABOR MARKET TRENDS

**First, there is a continuing trend which finds more young people entering the Bridgeport labor force every year than older people retiring.** The Connecticut Labor Department estimates that between 1970 and 1975 some 29,700 working people died or retired from the Bridgeport labor force. At the same time 34,800 job seekers entered the Bridgeport labor force from school, from housework, or from other cities.

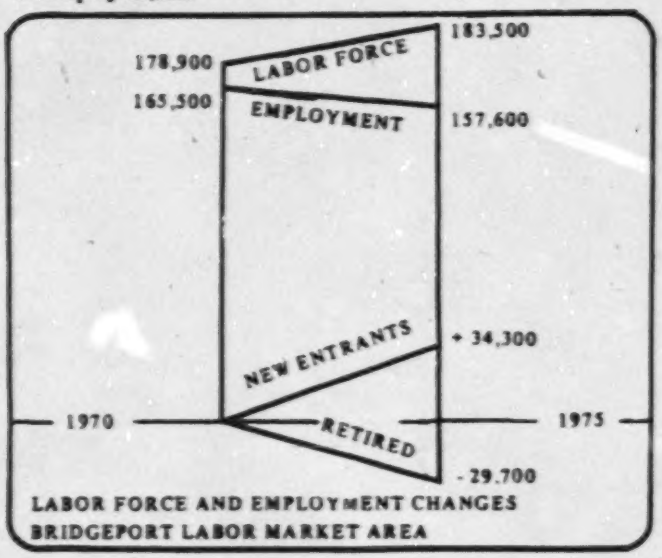
On balance, the total area labor force increased by 4800. This means that the Bridgeport area needed 4800 new jobs over the last five years just to keep pace with the aging process which continually changes both the size and the age composition of the resident labor force.

**The second major trend, the continuing decline of Bridgeport's manufacturing base,** has hindered the area economy's capacity to keep up with this pace, and the negative impact of this trend will continue to restrict new job creation through the rest of the 1970's. Total manufacturing employment, down by 13,000 since 1970, could fall by another 4-5,000 by 1980.

It's important to remember that Bridgeport is going through the same long-term transition sweeping the rest of the country—that is, the transition from an industrial economy to a service economy. On a long-term basis, the number of manufacturing jobs will continue to decline, and the number of service jobs will continue to increase.

The key to the vitality of a local economy, however, is the extent to which these trends balance each other out. If service jobs are increasing faster than manufacturing jobs are declining, there will be enough net growth to provide for the growing labor force plus reduce the overall level of unemployment.

Unfortunately, new jobs created in Bridgeport's retail trade, government, and service sectors combined to provide only 4700 to offset the loss of 12,900 in manufacturing. The net loss of 8200 jobs means that the Bridgeport area economy has fallen significantly behind the growth pace of the labor force, and the overall level of unemployment has increased dramatically. As indicated in the chart below, the total Bridgeport area labor force increased by 4800 but total employment dropped by 8200. Total unemployment shot up by 12,800.



LABOR FORCE AND EMPLOYMENT CHANGES
BRIDGEPORT LABOR MARKET AREA

**In perspective, of the 29,700 people who died or retired since 1970, only 72 percent, or 21,800, were replaced. Of the 12,900 manufacturing jobs lost, only 36 percent, or 4,700, were made up in the non-manufacturing sector.**

### STANDARD OF LIVING

**In order to trace the net economic impact of these trends, we have developed a standard of living index based upon the number of people looking for work, the number of jobs available, and the average wage of those who are working. Figure 1 shows the 5 year trend in earnings per worker (including those not working) expressed in 1967 dollars.**

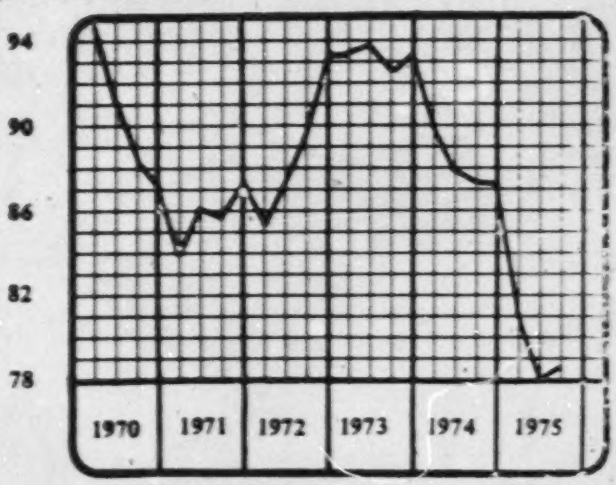


Figure 1 EMPLOYMENT EARNINGS PER WORKER
(deflated; 1967 = 100)

**By this measure the standard of living reached an all-time high in Bridgeport in 1969, and in 5 of the 6 years since has fallen significantly below this level.** The sharp cutback in defense production after 1969 which resulted in Bridgeport's manufacturing sector cutting some 18,000 jobs almost overnight, shows up as a 15 percent drop in the standard of living by early 1971.

We pointed out in the first issue of Perspective that real earnings of those employed continued to increase through 1972. In addition, toward the end of this period large numbers of people dropped out of the labor force, so that our measure of jobs per worker shot up. Thus, the loss of manufacturing employment accounted for nearly all of the 1970-1971 dip in the standard of living.

With the national economic recovery in 1972 came a modest rebound in total employment in the Bridgeport area, which, coupled with continuing real wage increases and a shrinking labor force, succeeded in recouping much of the loss in the standard of living by early 1973.

Beginning in 1973, however, real wages began to drop sharply as inflation accelerated to 14 percent through 1974. Although total employment continued to increase slowly through 1974, the economic impact of deteriorating incomes forced a rapid growth in the labor force, resulting in a 7 percent drop in the standard of living by last December.

Then came the recession. Employment dropped by 5 percent, the number of people looking for work shot up to record levels, and inflation continued to eat sizable chunks of real wages, resulting in a full 10 percent decline in the standard of living by June.

**In September the real value of earnings per worker stood fully 21 percent below the 1967-1969 boom times in Bridgeport.** On balance, labor force growth accounted for 2 percent of the drop in the standard of living. Employment losses accounted for another 5 percent. It was inflation, however, up 50 percent over the 6 year period, which ate away fully 15 percent of Bridgeport's standard of living.

(continued next page)

Looking down the road the standard of living should begin to inch back up. In September earnings per worker were 1 percent above June levels. With the labor force already swollen to record levels, it is unlikely that it wil grow significantly larger. In fact, large numbers of job seekers are dropping out of the labor force at the moment. Employment should begin to climb by mid-1976, and inflation continues to moderate, so that the standard of living should begin to improve significantly by late-1976.

### JOB OPENINGS

It's important to examine these general trends in detail, because if we just look at the overall pattern of change we miss many of the positive and negative shifts which have the most direct impact on job opportunities. It's true that overall 8200 jobs have been lost. It's also true that 21,500 jobs have been filled. The explanation is that at any point in time, new people will be coming into the labor force, older people will be retiring, some jobs will be cut, and some will be expanded. The labor market does a lot more churning than the overal trends suggest.

Lets examine the 1970-1975 employment changes in the nine major occupations to get some idea where the jobs have been available and to investigate what these continuing trends suggest about the kinds of jobs that will be available over the next year.

The table below shoes the 1970-1975 pattern of total job openings, including new jobs and openings created by the need to replace older workers. The occupations are ranked according to their proportion of total job openings over the last five years.

Notice first that in all but two occupations no new jobs were created, in fact many positions were cut. And in the two occupations that expanded, sales and service occupations, the new jobs accounted for only 10 percent of total openings. **In general, attrition in the labor force has generated the major proportion of total job openings.**

Notice also that the top five occupations, mostly white and grey collar jobs, accounted for 96 percent of total job openings. Clerical and service occupations, the first and fifth ranking in terms of size, experienced the larges expansion. Although total clerical jobs declined by 600, some 8900 openings were created through attrition, and the resulting 8300 job opportunities accounted for nearly 40 percent of the total. Total service employment actually increased by 700, and in addition some 4400 older workers were replaced. The resulting 5500 job opportunities represented nearly 25 percent of the total.

Professional/technical and sales occupations accounted for another 25 percent. The 1800 managerial/administrative openings added another 6 percent.

Reflecting the sharp drop in manufacturing employment, blue collar occupations took 95 percent of the net loss and generated only 30 percent of the replacement needs, so that a new of only 800 jobs were filled in blue collar occupations over the last five years.

Operatives and craftspersons, the second and third rankng occupations in terms of size, suffered the most severe cutbacks. Together, they accounted for over 90 percent of the net loss in jobs.

(continued next page)

OCCUPATIONAL EMPLOYMENT CHANGES
BRIDGEPORT LABOR MARKET AREA
1970 - 1975

| | 1970 | 1975 | Net Change 1970-1975 | Replacement 1970-1975 | Total Job Openings |
|---|---|---|---|---|---|
| TOTAL EMPLOYMENT | 151,100 | 142,900 | -8,200 | 29,700 | 21,500 |
| OCCUPATIONS | | | | | |
| Clerical | 30,000 | 29,400 | - 600 | 8,900 | 8,300 |
| Service | 16,200 | 16,900 | + 700 | 4,400 | 5,100 |
| Professional/Technical | 20,400 | 19,700 | - 700 | 3,500 | 2,800 |
| Sales | 9,800 | 10,100 | + 300 | 2,400 | 2,700 |
| Managerial/Administrative | 11,900 | 11,800 | - 100 | 1,900 | 1,800 |
| Operatives | 29,200 | 24,300 | -4,900 | 5,300 | 400 |
| Laborers | 4,900 | 4,700 | - 200 | 500 | 300 |
| Transport Operatives | 4,800 | 4,700 | - 100 | 400 | 300 |
| Craftspersons | 23,900 | 21,300 | -2,600 | 2,400 | - 200 |

source: estimates based on CT Labor Department data.

## ANALYSIS continued

### JOB PROSPECTS

**Clearly, the most important influence on the pattern of available jobs over the next year is the trend in total employment. We know that approximately 6000 workers are due to retire or otherwise leave the job market in 1976. If total employment increases there will be more than 6000 jobs available. But, of course Bridgeport needs more than 6000 jobs, because 7000 new workers will be in the market next year. Added to this, the fact that 20,000 are unemployed already means that the ratio of applicants to openings could be as high as 5 to 1.**

**In that case, here is a guide to where the longest lines will be. Based upon historical attrition patterns, the Connecticut Labor Department estimates that 5930 replacement openings will develop in 1976, as follows:**

| | |
|---|---|
| **Total Replacement Needs** | **5930** |
| **Occupations:** | |
| **Professional/Technical** | **705** |
| **Managerial/Administrative** | **372** |
| **Sales** | **478** |
| **Clerical** | **1773** |
| **Craftspersons** | **480** |
| **Operatives** | **1060** |
| **Transport Operatives** | **87** |
| **Laborers** | **110** |
| **Service** | **874** |

**For some idea where to go looking for these jobs, the following table shows the 5 fastest growing occupations have been located primarily in the 4 fastest growing employment sectors. The Service sector (30 percent), Retail Trade (22 percent), Government (18 percent), and Finance, Insurance, and Real Estate (10 percent) combined to provide 80 percent of total job openings. 73 percent of clerical openings, 94 percent of service openings, 91 percent of Professional/Technical openings, 85 persent of sales openings, and 83 percent of managerial/administrative openings developed in these four leading employment sectors.**

GROWTH SECTORS

| GROWTH OCCUPATIONS: | Service Sector | Retail Trade | Government | FIRE* | Total |
|---|---|---|---|---|---|
| Clerical | 19% | 15% | 24% | 15% | 73% |
| Service | 37% | 22% | 35% | | 94% |
| Professional/ Technical | 91% | | | | 91% |
| Sales | | 63% | | 22% | 85% |
| Managerial/ Administrative | 19% | 33% | 14% | 17% | 83% |
| Proportion of Total Openings | 30% | 22% | 18% | 10% | 80% |

*FIRE = Finance/Insurance/Real Estate

source: estimates based on CT Labor Department data.

## UNEMPLOYMENT

### BRIDGEPORT AREA UNEMPLOYMENT

| | OCT 1975 | Percent of Labor Force |
|---|---|---|
| **TOTAL UNEMPLOYMENT** | **20,058** | **12.0%** |
| **Bridgeport** | **9,968** | **13.7%** |
| **Easton** | **83** | **4.6%** |
| **Fairfield** | **2,418** | **9.6%** |
| **Milford** | **3,095** | **13.0%** |
| **Monroe** | **437** | **8.9%** |
| **Stratford** | **2,600** | **10.8%** |
| **Trumbull** | **1,457** | **10.4%** |

source: CT Labor Department

Since June, full-time jobs in the Bridgeport area have been cut by 1,000, but the official labor force dropped by 2,500, so that official unemployment actually decreased by 1,500. This unusual outcome reflects the method of calculating who is in the labor force: the 2,500 workers not counted in October are still unemployed, which means that total unemployment continues to increase.

The City of Bridgeport continues to experience the most severe unemployment problems with 13.7 percent, or 9,968 people, officially unemployed in October.

Milford, Stratford, and Trumbull are all suffering from unemployment in excess of 10 percent. Monroe and Fairfield are faced with less severe problems, and Easton continues to have nearly full-employment.

**Bridgeport Area Economic Perspective is a quarterly publication prepared by the Deaprtment of Human Resources Development of the City of Bridgeport for exclusive distribution by the Bridgeport CETA Consortium. Requests for copies as well as comments or questions regarding any material contained herein will be welcomed by the Office of Labor Market Research, City Hall, Bridgeport, CT 06604.**

# LABOR MARKET INFORMATION

**BRIDGEPORT AREA EMPLOYMENT**

| | OCT 1975 | Percent Change OCT 74-OCT 75 |
|---|---|---|
| TOTAL EMPLOYMENT | 143,940 | - 4.8% |
| MANUFACTURING | 58,070 | - 9.2% |
| Transportation Equipment | 10,300 | + 2.2% |
| Fabricated Metals/Ordnance | 9,450 | -12.3% |
| Electrical Equipment | 9,360 | -11.9% |
| Machinery | 7,860 | - 8.5% |
| Primary Metals | 3,970 | -11.4% |
| Other Manufacturing | 17,130 | -11.7% |

| | OCT 1975 | Percent Change OCT 74-OCT 75 |
|---|---|---|
| NON-MANUFACTURING | 85,870 | - 1.6% |
| Construction | 5,390 | - 6.9% |
| Transportation | 3,620 | - 3.2% |
| Communications/Utilities | 2,850 | - 0.7% |
| Wholesale Trade | 6,290 | - 3.2% |
| Retail Trade | 22,830 | + 1.4% |
| Finance/ Insurance/ Real Estate | 5,830 | - 0.7% |
| Services | 23,240 | 0.0% |
| Government | 15,820 | - 5.4% |

source: CT Labor Department

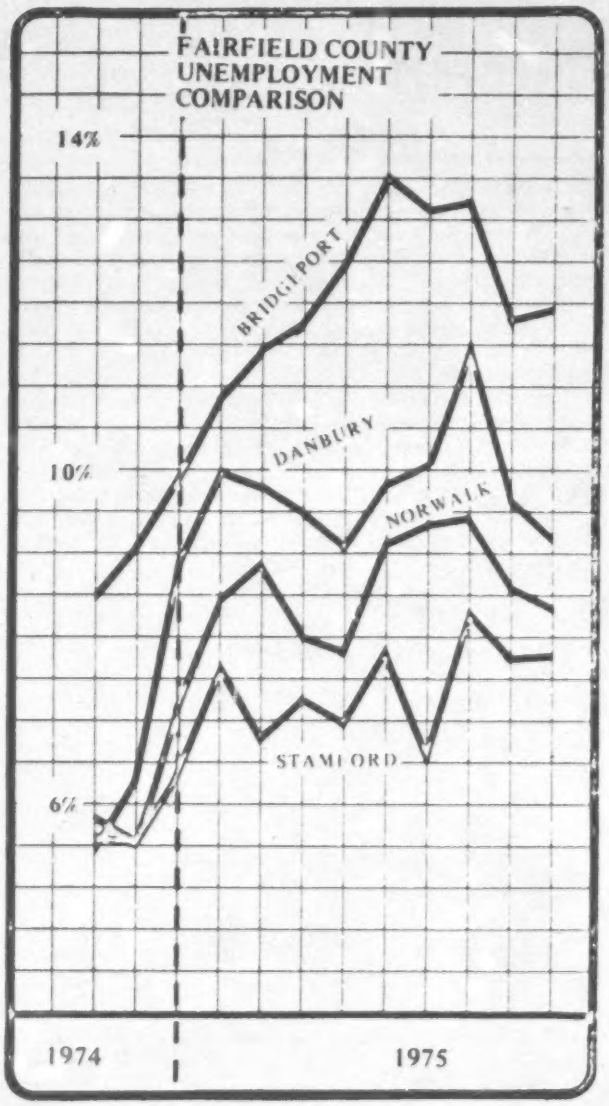
## EMPLOYMENT

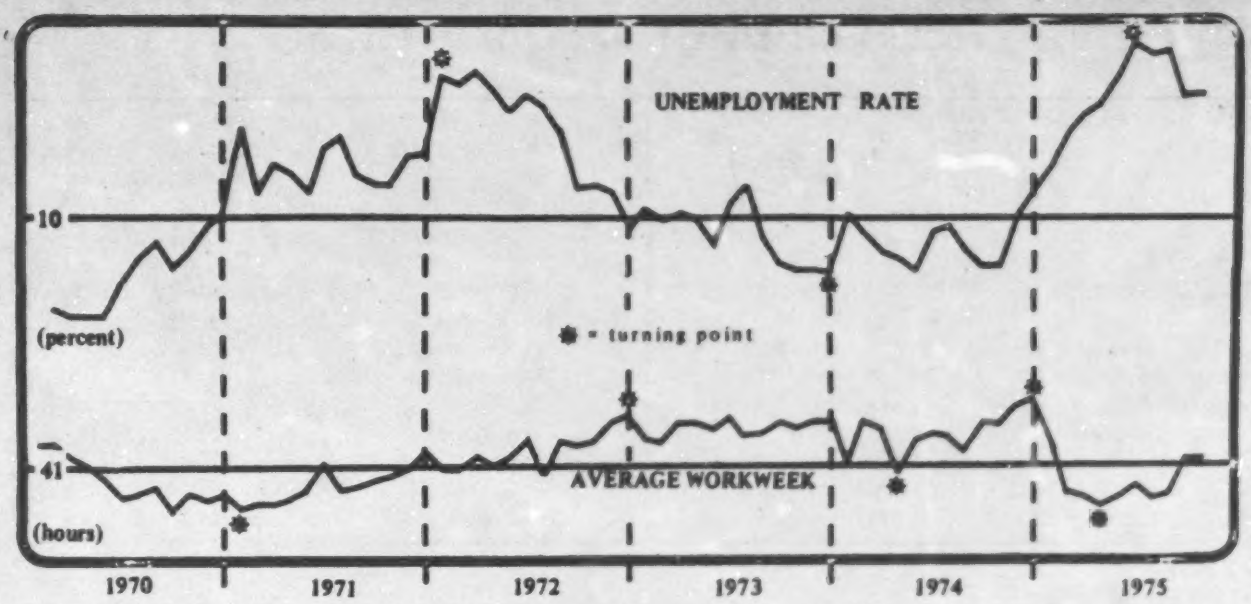
October employment in the Bridgeport Labor Market was a full 5 percent, or 7,260 jobs, below October 1974. The only employment increases over the year occured in Retail Trade and Transportation Equipment. Employment in the Service sector remained unchanged, and all other employment sectors declined.

Manufacturing employment, which dropped by 11 percent between September 1974 and August 1975, has begun to recover, up by 2.5 percent since August. Non-manufacturing employment bottomed out in February some 6 percent below October 1974 levels and has slowly regained nearly 3 percent since February.

## UNEMPLOYMENT

At the moment, the Bridgeport Labor Market includes 43 percent of the Fairfield County labor force, and suffers 52 percent of the unemployment. Throughout this recession, as indicated in the graph to the right, unemployment in Bridgeport has remained 3 to 4 percent above other Fairfield County labor markets. Beginning last October, Bridgeport unemployment rose more steeply, and peaked significantly above the unemployment rates experienced in Danbury, Norwalk, or Stamford. The Stamford Labor Market has witnessed the least rapid increases and the lowest overall level of unemployment, managing to remain below 8 percent in every month except August.






# FORECAST

The average workweek in manufacturing is a "leading" indicator in the sense that it provides important evidence concerning future changes in economic activity. Economists have noticed that since employers can change the number of hours worked more readily than the number of employees, the average length of the workweek usually begins to increase or decrease sometime before a corresponding change in the level of employment. The workweek is therefore a "leading" indicator with respect to the unemployment rate.

This relationship appears to hold for the Bridgeport area, as demonstrated in the graph above. Notice that the turning points in the unemployment rate are preceded from 9 to 12 months by turning points in the workweek. For example, the workweek lowpoint in January 1971 forecast the highpoint in unemployment in January 1972, and the workweek highpoint in December 1972 forecast the unemployment lowpoint in December 1973.

We've been following this "leading" indicator closely over the last few months in an attempt to forecast the highpoint in current unemployment. The workweek highpoint in December 1974 suggests that current unemployment, which has been moderating over the last few months, will shoot up again in January.

Most important, the apparent workweek lowpoint in March 1975 suggests that unemployment will not begin to come down again until April 1976. The strength of the upturn in the workweek indicator over the next few months will provide some indication whether next April's anticipated downturn in unemployment will be sustained through the rest of 1976.

We've also examined this "lead-lag" relationship in each of Bridgeport's 11 major industries in an attempt to pinpoint exactly where we can expect the upturn to occur. Don't hold your breath. In only two industries, primary metals and instruments, does it appear that much of an upturn will occur at all. In fact, in five industries — machinery, fabricated metals/ordnance, transportation equipment, printing/publishing, and apparel — we expect employment to continue to decline, so that no significant upturn in manufacturing employment should be expected at least during the 1st quarter of 1976.

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BRIDGEPORT, CT 06604

## CHAPTER V

## CONCLUSIONS AND RECOMMENDATIONS

### The Information Problem

The problem, in the main, seems to be simply that of information. Job seekers need better information in the form of career guidance, current employment opportunities, and job requirements; labor market intermediaries, such as the Connecticut State Employment Service and private personnel agencies need better information for their functions of job development and job referral; and potentially local employers need better information relative to current labor supply, and current training programs designed to upgrade the potential workforce.

The solution is to design a system which would relate relevant and timely information on occupational and industrial employment levels and changes, wage rates, commuting patterns, and the like, and to help determine the needs for skill training and education in the Bridgeport manpower consortium area. There are many sources supporting skill and educational training in the area. While the main focus of our effort will be CETA-funded manpower programs, there are private technical training schools, a variety of educational institutions (post high school) producing skills for the labor force, and the high school educational system who would all benefit and hopefully coordinate with this system. This computerized system would then determine skill training needs, not only for federally funded manpower programs, but serve any training institutions or potential training institutions in the area in order to provide a coordinated skill training and educational effort.

But to produce such a system requires information, and better information which is both timely and comprehensive and which can be plugged into an analytic framework to facilitate better decision-making by all groups concerned (job seekers, job developers, and employers). It is expected in the longer run that improving the quality of labor market information would contribute directly to lowering the rate of unemployment in the Bridgeport area.

Some information problems have arisen in the context of a fundamental reorganization of governmental programs. The decentralization and decategorization of manpower programs is placing continued demands on the Department of Labor to provide more meaningful labor market information to manpower planners. In addition, the information problem becomes increasingly more serious as the 1970 Census becomes out-of-date. Currently, the only detail available with respect to labor force characteristics stem from April 1970, and it is well-known but rarely documented that considerable changes have taken place since that time.

Fortunately, a variety of government agencies and local organizations currently generate information on the Bridgeport Labor Market which could be helpful to manpower planners. One of the objectives of the manpower research staff effort under this grant was to pull together all these available pieces of information --i.e., special Department of Labor reports; regular and specially requested reports from State sources and regularly produced local information. The major reason for attempting to collect and compile all available information is to identify those areas where critical information is lacking, and to develop a strategy for filling these serious gaps in labor market information.

Linking the Components of the LMIS and MIS

The next logical step in order to fully complete the manpower information systems project involves the integration, or linking phase. Each of the systems mentioned previously is able to stand alone, but to link the three would have a reinforcing effect. The end-product would then be a highly effective and efficient comprehensive manpower system capable of providing more total information then is possible when the systems stand alone.

The capability to have each system communicate with the other two would offer tremendous advantages. As one example of the inherent strength of the integrated system, consider the following. Planners desire timely information on how to allocate most efficiently x number of dollars. More specifically, to determine what segment of the population is most in need of services, type of services, what are the costs of these services, which subcontrators are most effective in providing these services, the likelihood that upon completion of these services, clients will find unsubsidized employment in the labor market, etc.? The proposed system will provide this information to the planner. The planner may further request for the system to provide genuine alternative strategies. With such information available, the planning process can literally take on an additional dimension. The above mentioned example is only one of the manyfold that are available with such a proposed system.

Only in such an environment can the allocation of scarce resources among competing activities be performed in an optimal manner. The basis for such a system is presently available, it just requires the integration effort and further research funds.

Below is a tentative time-frame along with basic staff requirements and expected costs to fully complete this project.

| STAFF REQUIREMENT(S) | TIME | COST |
|---|---|---|
| 1. Project Director | 1 year | $21,000 |
| 2. Statistical Analyst | 1 year | 16,000 |
| 3. Programmer/Analyst | 1 year | 16,000 |
| 4. Labor Market Analyst | 1 year | 14,000 |
| 5. Research Assistants | 6 months | 22,500 |
| 6. Key-Punch Operator | 1 year | 8,000 |
| | EXPECTED TOTAL | $97,500 |

Conclusions

The advisability of the proposed integrated system cannot possibly be overstated. The more effective and efficient information flow and timely communication between supply and demand labor components serve to promote social welfare, better economic health, and a highly efficient use of government funds for the CETA system.

The better managing and controlling tools contained in BAMMIS along with the LMIS capabilities will yield effective information for planning and evaluation. Furthermore, the complexities involved in managing CETA in today's labor supply/demand situation clearly dictate the use of a system such as the proposed comprehensive manpower information system. Sound LMIS and MIS reporting systems, monitoring and planning mechanisms tightly keyed to managing the plan, must be in place before the prime sponsor can begin to know what is happening in the labor market and in the CETA programs. The prime sponsor will then be in a position to make

the necessary subjective interpretations and judgments on matters such as weeding out ineffective policies and subcontrators and obtaining maximum utility per dollar spent.

Moreover, it is the responsibility of management to continuously upgrade the system as needs are realized in order to provide better and more efficient tools for itself as needs arise. The dynamic aspects built into the system allows specifically for this task to be accomplished with ease. Furthermore, other prime sponsors who contemplate the design of such a system should consider the Bridgeport system first and direct special attention and efforts to the impact and outcome evaluation procedures.



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